JULY 20, 1946

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Railway Age

Founded in 1856

here's how
BYERS WROUGHT IRON
fits into the durability picture

There is no industry where equipment worked longer, harder and took more of a beating than the railroads. The biggest repair-replacement job in history is just ahead, and the aim of every thoughtful railroad man is to build in the same dependability that helped the old equipment to meet emergencies so well.

Wherever durability depends on unusual resistance to corrosion and fatigue failure wrought iron is the logical material. Just as a reminder, here are some of the many places where its service qualities are of particular value.

. . . in locomotive and car piping, where vibration causes fatigue failure of ordinary materials,

. . . in the decks of ballast-type bridges, where drippings from refrigerator or coal cars cause severe corrosion,

. . . in locomotive staybolts, where vibration, high temperatures, shock and strain must be withstood,

. . . in blast plates, where "sand-blast" from cinders and corrosion from smoke team-up to destroy vulnerable materials,

. . . in pier protection plates, which must combat brackish or polluted waters, and mechanical damage from floating ice or debris,

. . . in tanks and coaling stations, where corrosion is a constant threat,

. . . in radiant heating installations, where the embedded pipe must have proven durability.

Wrought iron's longer life in these applications is the result of its unusual structure. Tiny fibers of glass-like silicate slag are threaded through the body of high-purity iron. This gives a structure like that of a stranded wire cable, and thus resists fatigue failure. The fibers also halt and diffuse corrosive attack, and anchor the initial protective scale more firmly.

Our General Catalog will give you full dimensional data. Ask for a copy.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston, Seattle, San Francisco, Atlanta.

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE ALLOY STEELS · OPEN HEARTH ALLOY STEELS
CARBON STEEL TUBULAR PRODUCTS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

UNIT TRUCK

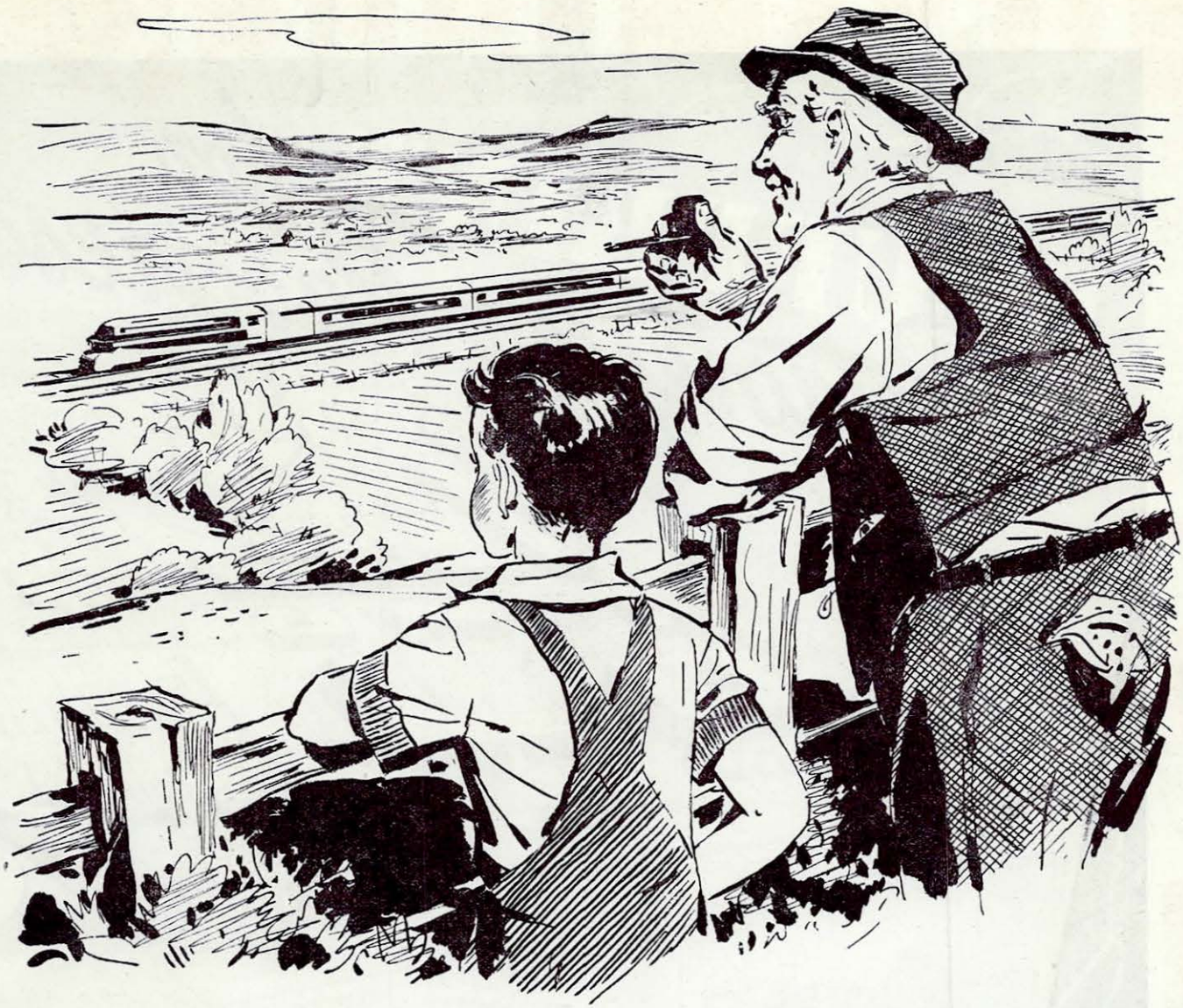
GATX
GENERAL
AMERICAN

THEY DON'T *guess* — THEY *know*

GATX is only one of the twelve private car companies who use UNIT TRUCKS. Because mileage is the only commodity they have to sell, there can be no guessing at maintenance costs here. The increasing use of UNIT TRUCKS in this class of service is based solely on proven performance in terms of reduced brake rigging maintenance and higher availability . . .

Unit Trucks are in operation or on order on 45 major railroads and the following private car lines . . .
American Refrigerator Transit — Barrett Division, Allied Chemical & Dye Corp. — Cabot Carbon Co. — Fruit Growers Express — General American Transportation Corp. — Monsanto Chemical Co. — New England Alcohol Co. — Swift & Company — Union Tank Car Co. — Western Fruit Express — Westinghouse Electric & Mfg. Co. — Wilson Car Lines.

UNIT TRUCK CORPORATION • NEW YORK



"Bet Those Wheels Take a Beating!"

When the Limited zooms by at a hundred an hour, it's natural to wonder how the wheels ever stand it. Grandpa remembers the far slower trains of an earlier era; he can't understand how the wheels hold together at today's great speeds.

The fact is, wheel-making technique has kept pace with the other phases of railroad progress. For example, at Bethlehem's shops, the forging, rolling, machining, and heat-treating equipment is designed to make wheels for today's super-speeds and heavy service; wheels as modern as today's date on your calendar.

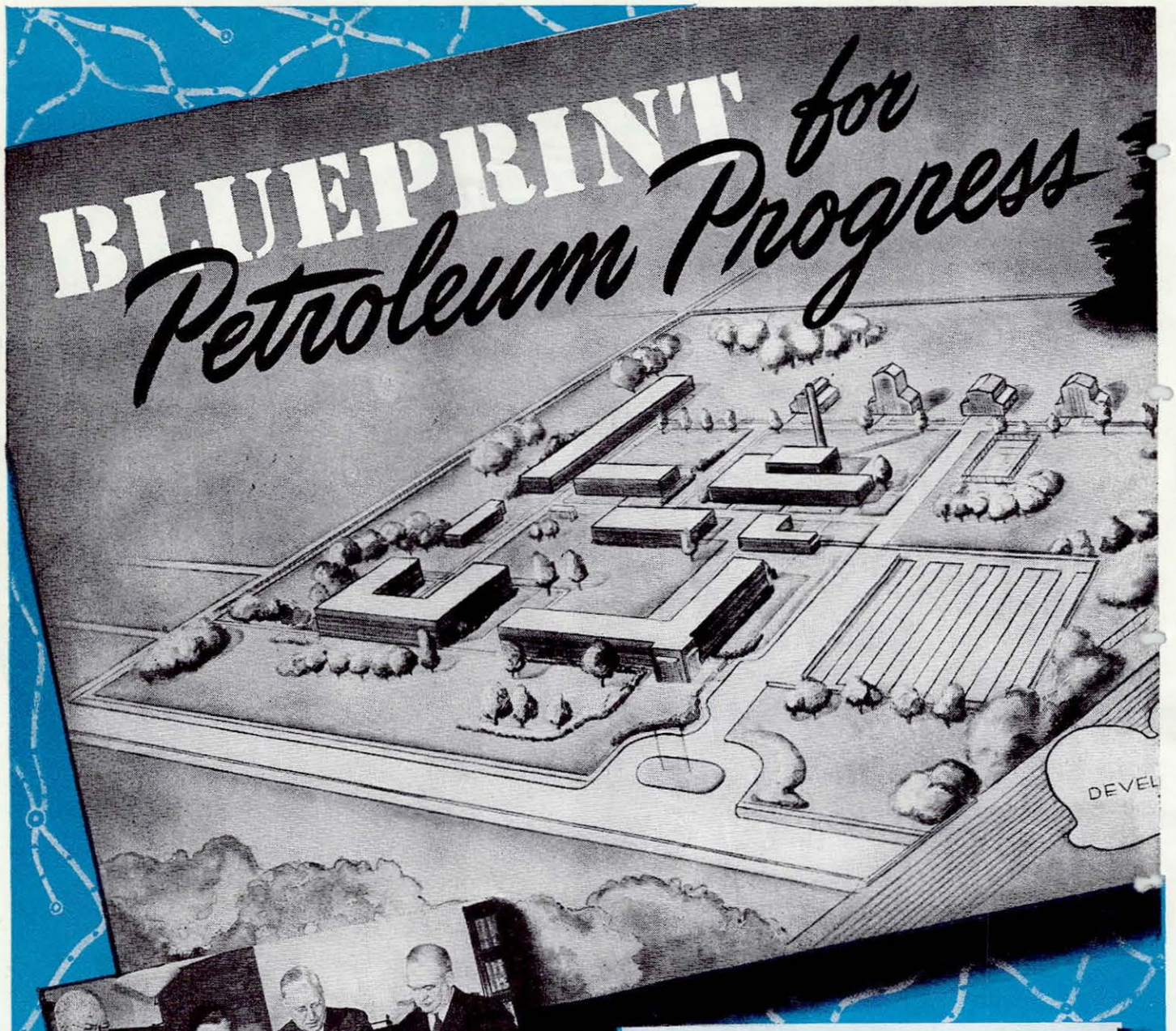
Bethlehem wrought-steel, heat-treated passenger wheels are in use by many leading roads. They were adopted for some of the first streamlined trains. Their ruggedness, high reliability, and low cost per mile have been solidly established. And now, as the new postwar cars roll out of the shops, you will see even more Bethlehem wheels in service from coast to coast.

Let us furnish you full details of these long-lasting wheels and their teammates, Bethlehem forged-steel axles.

BETHLEHEM WROUGHT-STEEL WHEELS and FORGED-STEEL AXLES

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 121, No. 3.

BLUEPRINT for Petroleum Progress



Scale model of Sinclair Oil Corporation's new petroleum research and development laboratories planned for Harvey, Illinois. The architect's drawing is shown at top. Studying the model in the photograph are (l. to r.) E. W. Isom, V. P. Chg. of Research and Development, Sinclair Refining Company, recent winner of the coveted Stevens Honor Award, presented by Stevens Institute for notable achievement in science and engineering; Howard Jehu, Harvey Association of Commerce; Arthur E. Turngren, Harvey's Mayor, and Sheldon Clark, Chairman Executive Committee, Sinclair Oil Corporation.

SINCLAIR

in development of Railroad Lubricants

Sinclair has developed... and now supplies... special lubricants for more than 150 American railroads. Performance of these lubricants during the exacting schedules of war time... and currently in the heavy traffic loads imposed by reconversion... is evidence of the excellence of Sinclair research activity.

Now Sinclair assures the railroads of the United States of still greater product quality and service with construction of an elaborate new research center at Harvey, Illinois.

In this great petroleum laboratory—the first planned by any oil company since the war's end—recognized technological experts will have at their disposal the very latest facilities for the solution of the most difficult and specific railroad lubrication problems.

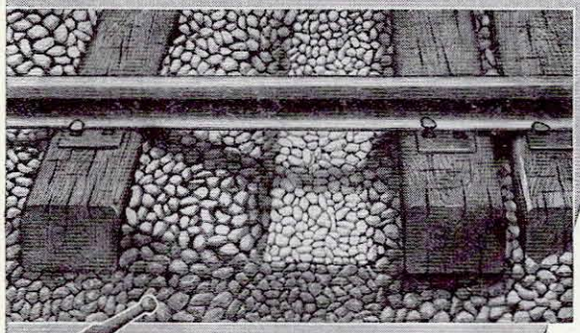
From the research work here, consistently top performance may be expected from Sinclair lubricants developed specifically for railroad use.

Railroad Lubricants

SINCLAIR REFINING COMPANY, *RAILWAY SALES*, NEW YORK · CHICAGO · ST. LOUIS · HOUSTON

It sure pays to know the difference

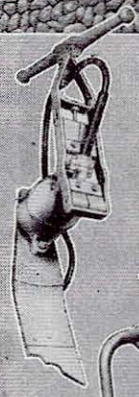
BETWEEN TIE TAMPING and BALLAST PLACEMENT!



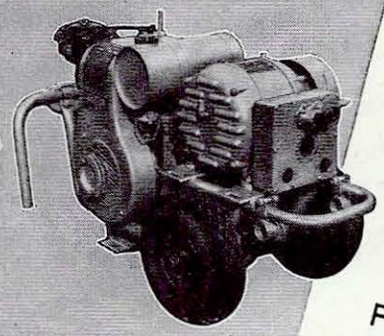
Since the early beginnings of railroad history, tucking ballast beneath ties has been known as tie tamping. And that's why we're prone to call our JACKSON ballast placing equipment, "JACKSON Tie Tampers." But there's a vast difference in the ordinary tamped job and the results obtained with JACKSON Tampers. In the first, ballast is rammed home beneath the tie until the opening will take no more. There can be no assurance, however, that pieces haven't jammed at odd angles or that no open spaces exist. And when that occurs the tie bed won't long remain firm.

On the other hand, the unique, powerful, vibratory action of JACKSON tampers with their sidewise, forward and fluttering action, shuffles the ballast around until the pieces are tightly fitted together into a closely integrated, very firmly compacted unit of mortarless masonry. This assures a tie-bearing that is almost as smooth as a mosaic floor and one that is bound to remain firm for a long, long time; thus eliminating much future maintenance work.

Furthermore, in any ballast and in any lift, JACKSON Tampers with their interchangeable blades, will do the job quicker as well as better. Let us give you complete details of the JACKSON method of ballast placement with JACKSON Tampers and their always dependable teammates, JACKSON Portable Power Plants. Write NOW!



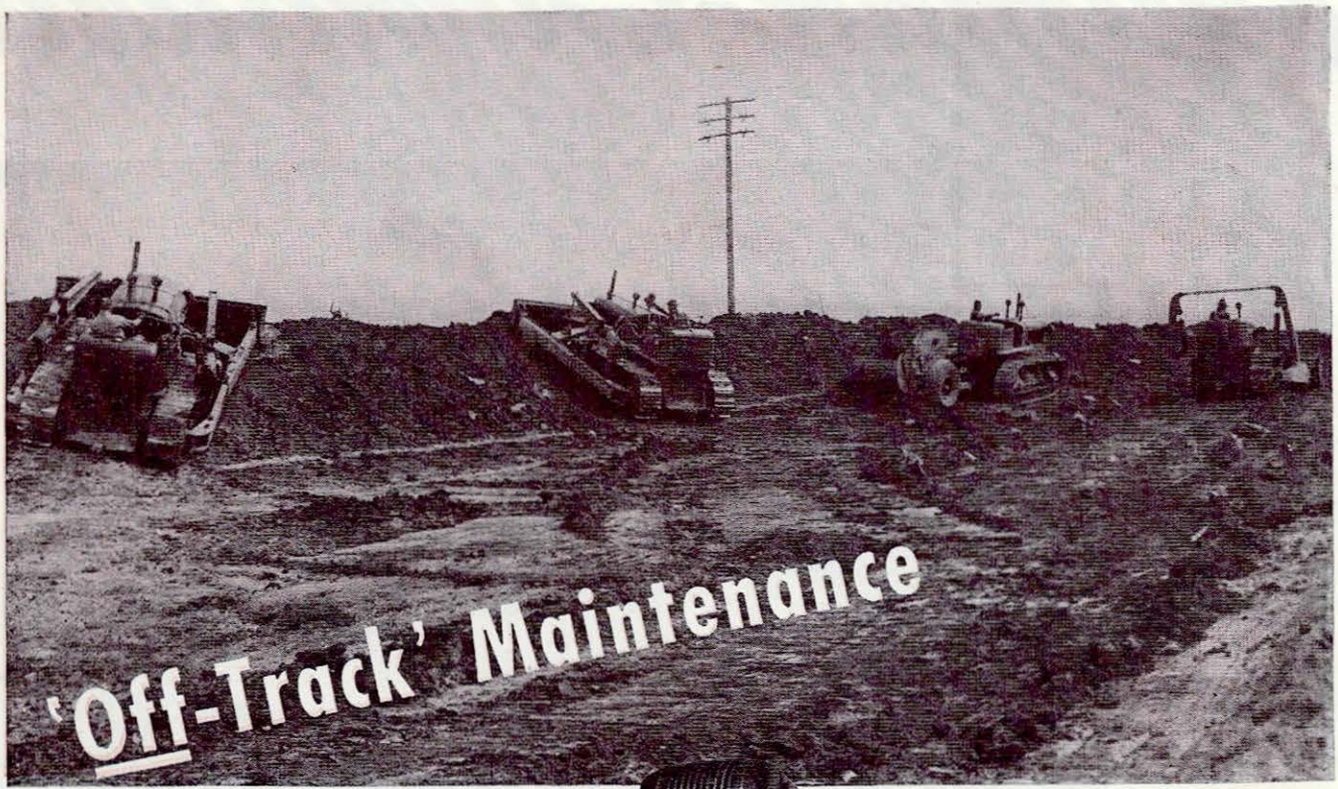
Conclusive proof of the superior tie foundation obtained with JACKSON Tampers may be had by moving a tamped tie sideways to expose the bed — a demonstration JACKSON Field Engineers are glad to make.



The JACKSON M-2 Power Plant — one of several models equipped with the new trouble-free, no-maintenance, permanent magnet generators. Capacities: 1.25 to 5.0 K.V.A. (Continuous duty), single phase and 3 phase, 115 Volt, 60 Cycle A.C., to operate 2, 4, 8 or 12 tampers or B&B tools to full rated capacity.

JACKSON VIBRATORY TIE TAMPERS and PORTABLE POWER PLANT

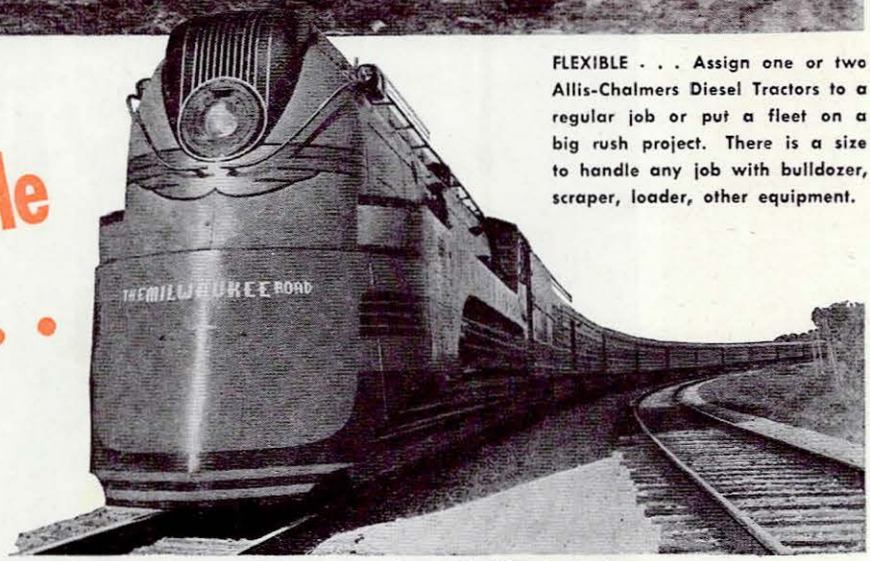
ELECTRIC TAMPER & EQUIPMENT CO. LUDINGTON MICHIGAN



'Off-Track' Maintenance

means:

On-Schedule Traffic . . .



FLEXIBLE . . . Assign one or two Allis-Chalmers Diesel Tractors to a regular job or put a fleet on a big rush project. There is a size to handle any job with bulldozer, scraper, loader, other equipment.

Courtesy the Milwaukee Road

Keep today's fast passenger and essential freight trains moving on schedule with construction and maintenance equipment that works free of the tracks . . . doesn't interfere with rail traffic . . . speeds up roadbed maintenance.

Allis-Chalmers Diesel Tractors work with auxiliary equipment to handle any grading or maintenance job, close to or far from tracks. They are easily transported from job to job by flat car, trailer or under their own power . . . go into action faster, work more safely, operate at lower cost, and put in as much as 50 per cent more working time than rail-bound equipment.

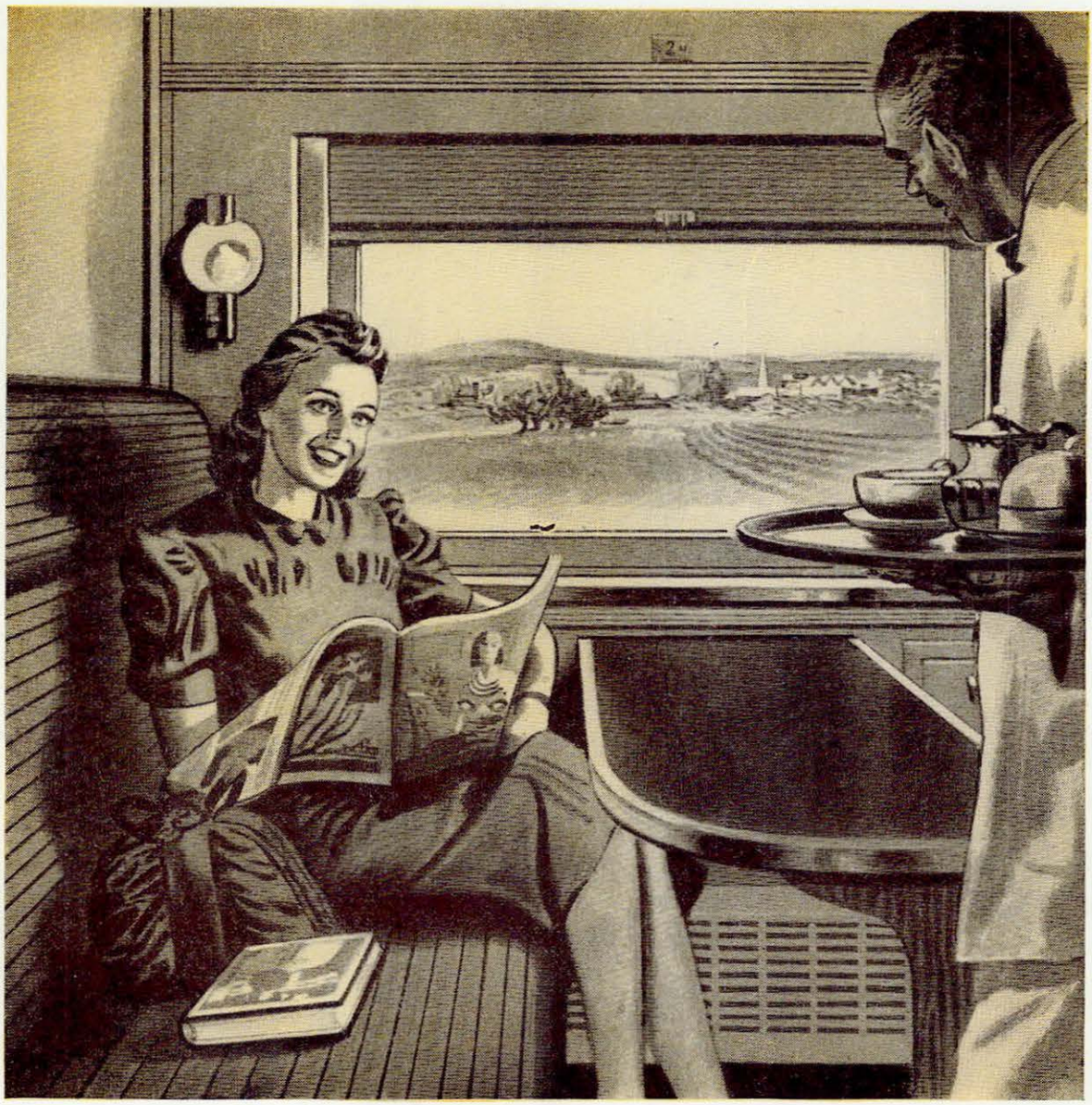
Get the complete story from your Allis-Chalmers dealer. We will be glad to put you in touch with him.

2-cycle Diesel Tractors
4 Models
60 to 132 drawbar H. P.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Motor Graders
Power Units
Road Machinery

Pullman-Standard



The Roomette... a revolution in sleeping car design

A private room with large window, complete, concealed toilet facilities, full length bed on balanced springs which slips from a wall space smoothly and without effort ready for sleeping, enclosed wardrobe, individual control of heat, light, ventilation and air conditioning.

Pullman-

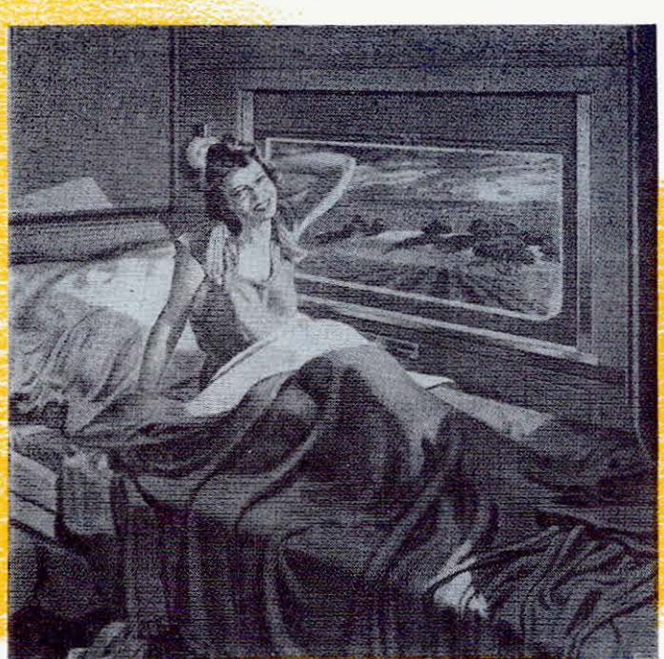
CHICAGO · NEW YORK

IS SLEEPING CAR HEADQUARTERS

The modern sleeping car is a Pullman-Standard creation.

All the major improvements which have made American sleeping cars the world's finest have been pioneered by this progressive company.

Pullman-Standard has introduced every kind of improvement yet known for moving sleeping accommodations out of the way during the day.



This company is the originator of room-privacy in sleeping cars.

Every basic type of sleeping car accommodation from the first sleeper ever built to the luxurious private rooms available on the modern streamliners has been a development of Pullman-Standard.

•

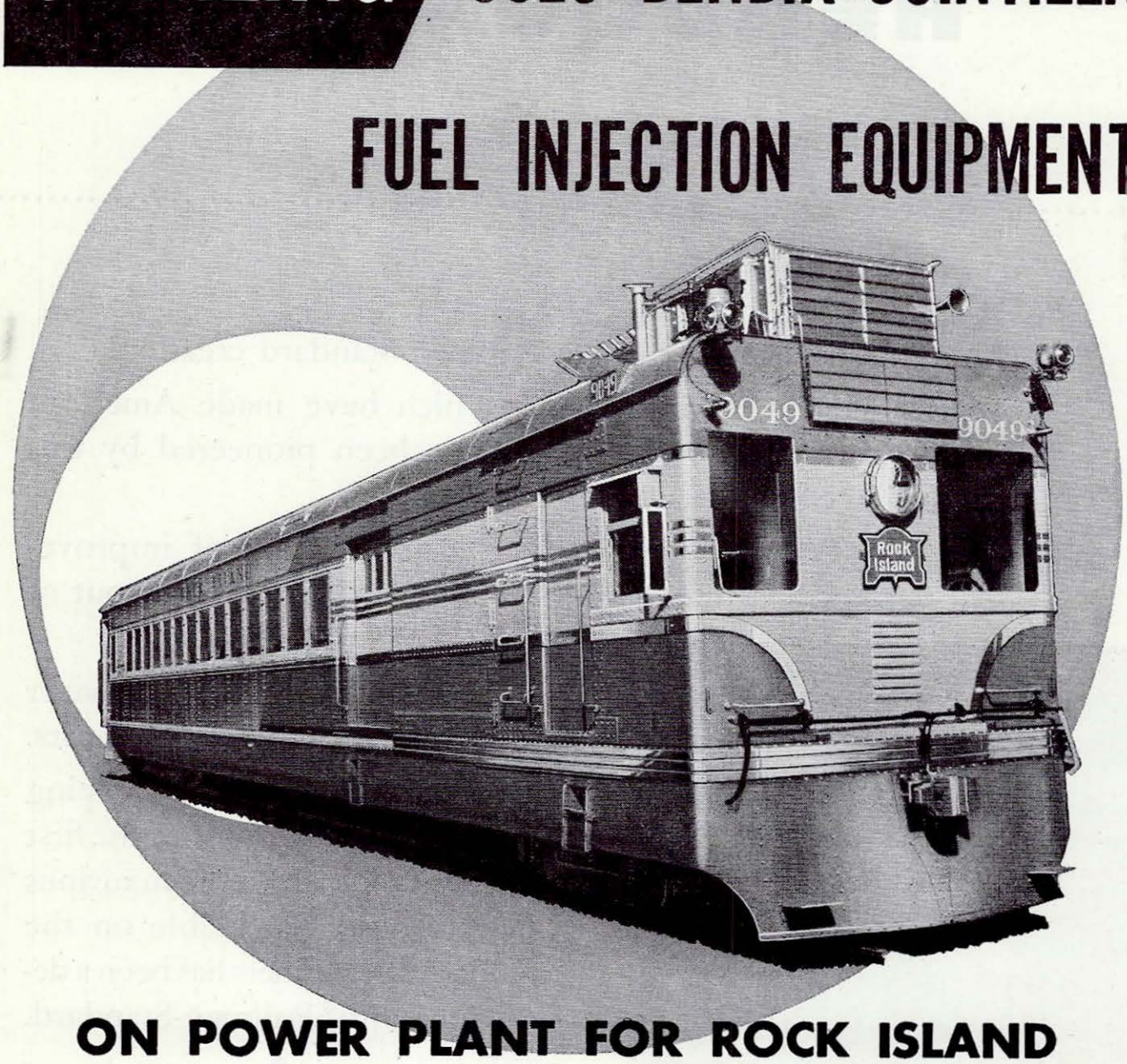
Pullman-Standard has consistently set the pace for others to follow.

Standard CAR MANUFACTURING COMPANY

CLEVELAND · WASHINGTON, D. C. · PITTSBURGH · BIRMINGHAM · WORCESTER, MASS.

San Francisco Sales Representative, Mark Noble

STERLING USES BENDIX-SCINTILLA FUEL INJECTION EQUIPMENT



ON POWER PLANT FOR ROCK ISLAND

Sterling Viking Diesels get the call on a conversion of Rock Island Railcar No. 9049 because of their power-packed reliability and remarkable economy. Effecting a saving of ⅓ former fuel costs, their high efficiency is due in no small measure to their use of Bendix-Scintilla* Fuel Injection Equipment as standard equipment.

Run after run, mile after mile, these Fuel Injection Pumps and Nozzle Holder assemblies serve as guardians against fuel waste, keeping efficiency high. Simply designed, and manufactured to rigid precision standards, the extra performance and dependability these units provide reflects Bendix-Scintilla's long experience on Diesel engines of all types.

Bendix-Scintilla will continue to provide all that is best of all that is new for railroads everywhere. The railroad industry can continue to look to Bendix-Scintilla as a partner in Diesel progress.

*TRADE MARK

SCINTILLA MAGNETO DIVISION
BENDIX AVIATION CORPORATION, SIDNEY, N. Y.

PRODUCT OF Bendix AVIATION CORPORATION

How they get real air-comfort all the way "On the Atchison, Topeka and Santa Fé"

Judy Garland travels on the Atchison, Topeka & Santa Fe in her new film, "The Harvey Girls." Photo by courtesy of Metro-Goldwyn-Mayer.

When the Atchison, Topeka & Sante Fe specified Anemostat Air-Diffusers for the streamlined "Hualpai," the Road struck a rich note for *real* air-conditioning comfort in trains.

With Anemostat, passengers are completely freed from drafts, stale air-pockets, uneven temperatures and unequalized humidity — the discomforts which are ever present when conditioned air is blown through out-moded grilles and registers.

Anemostat air-diffusers are scientifically designed to distribute conditioned air in pre-determined patterns. Car air, equal to about 35% of the supply air, is siphoned into the flaring metal cones of the Anemostat. This car air is mixed with the incoming conditioned air within the Anemostat — and revitalized — *before* it is recirculated at low velocities. Heated or cooled air, therefore, flows silently from the Anemostat — spreading *real* air-comfort throughout the car.

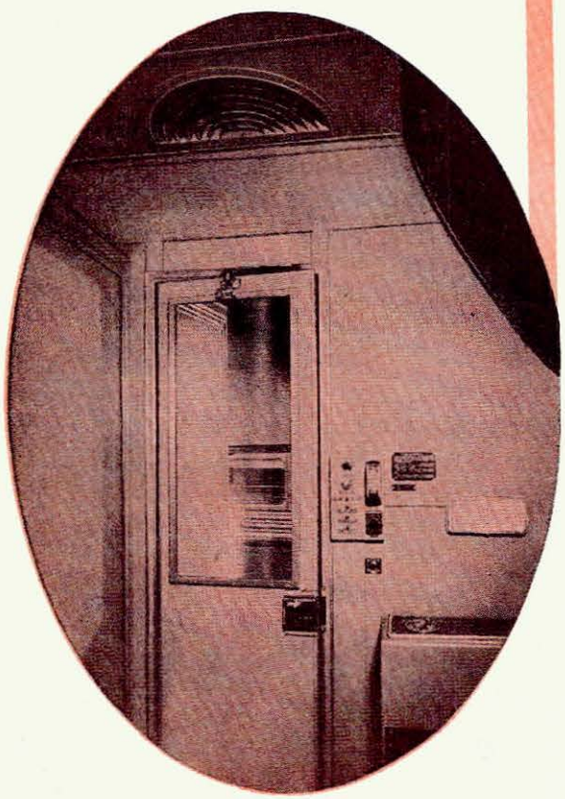
Furthermore, Anemostats allow simplified maintenance of air-conditioning equipment. Duct cleaning is quick. The simple, detachable inner assembly of the Type "W" specified for the "Hualpai," is removable by a turn of a thumb screw. In coaches and regular sleepers, Anemostats are hinge-mounted for full and easy access to the ducts.

When required, as in refrigerator cars, Anemostats can maintain temperature equalization (horizontally or vertically) as close as plus or minus ½°F. And Anemostats cannot wear out — *they have no moving parts.*

Because Anemostat air-diffusers eliminate atmospheric discomforts through *controlled* air-distribution, installations like the one in the "Hualpai" might be called a preview of perfected air-conditioning in trains of the future.

For further information about Anemostat draftless air-diffusion, write for bulletin today. Or, if you have an immediate air-conditioning or air-diffusion problem, an Anemostat engineer is ready to help you.

Type "W" ceiling Anemostat provides real air-comfort in a Roomette on the "Hualpai" — the newest Roomette car on the Atchison, Topeka & Santa Fe.



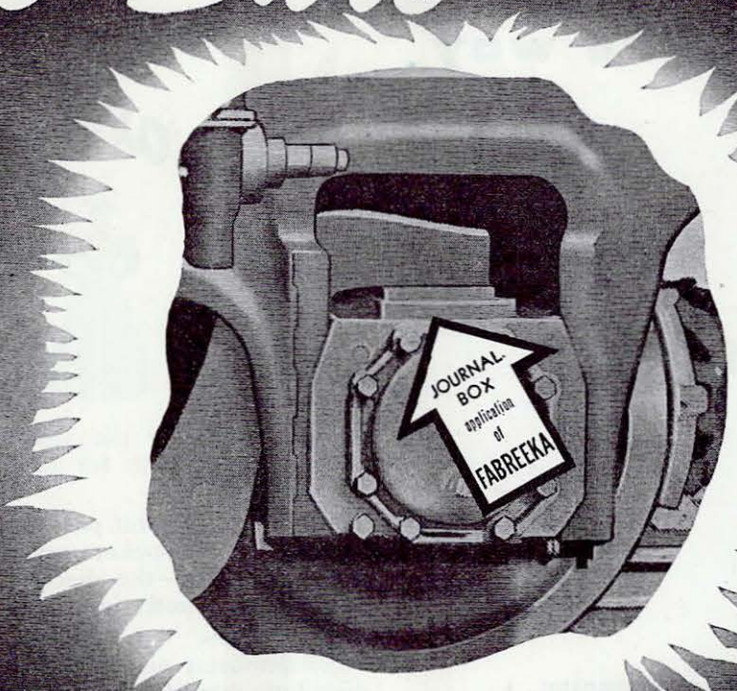
AC-1061

ANEMOSTAT
REG. U. S. PAT. OFF.

ANEMOSTAT CORPORATION OF AMERICA
10 East 39th Street, New York 16, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

"NO AIR-CONDITIONING SYSTEM IS BETTER THAN ITS AIR-DISTRIBUTION"

Make Sure



It's FABREEKA

TO ABSORB SHOCK, ISOLATE VIBRATION and REDUCE NOISE

★

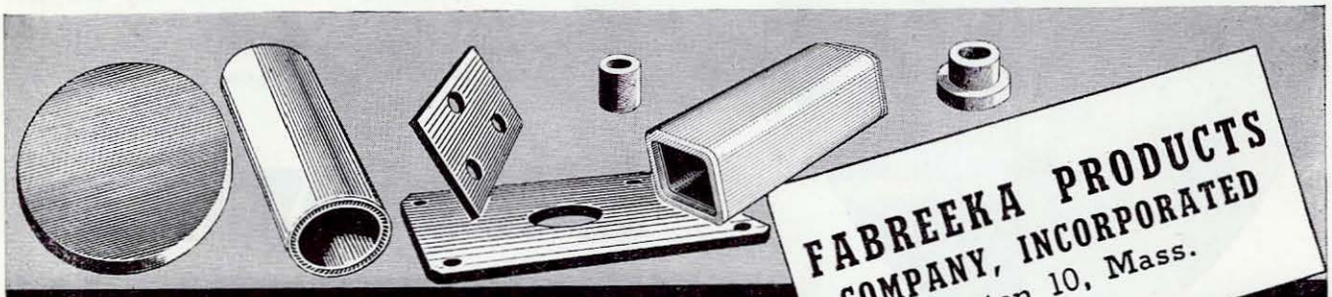
Important Uses Of FABREEKA On Passenger Cars:

1. At Coil Springs.
2. At Center Plates.
3. At Buffer Stems.
4. At Swing Hanger Bearings.
5. At Side Bearings.
6. At Journal Boxes.

Because of its unique structure and design, only FABREEKA can give extremely long life and effectively absorb shock, isolate transmitted vibration and reduce noise. This fact has been proven by more than 12 years' use on the nation's railroads.

We call your attention to these eight important characteristics of FABREEKA: **Long Life . . . Great Strength . . . Minimum Permanent Set . . . Used "In Compression" . . . Limited Resiliency . . . Stability . . . Safety . . . High Damping.**

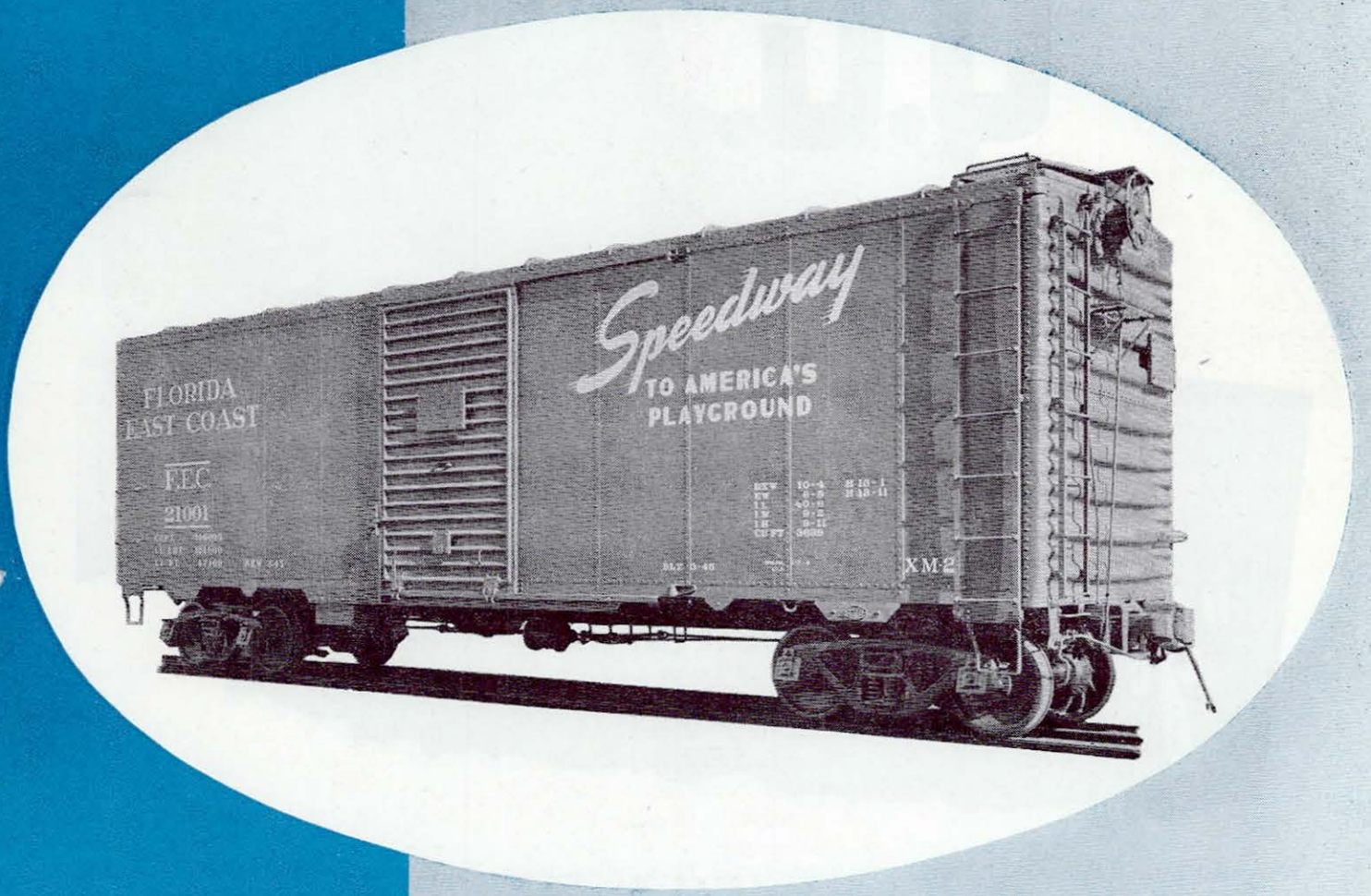
"Insist on Fabreeka"



Used in **RAILWAY PASSENGER CARS, Trucks and Platforms . . . LOCOMOTIVES, Steam and Diesel Electric . . . TRACK CONSTRUCTION, on Bridges, Crossings, Curves, Turntables and Track Scales.**

FABREEKA PRODUCTS COMPANY, INCORPORATED
Boston 10, Mass.

MAGOR

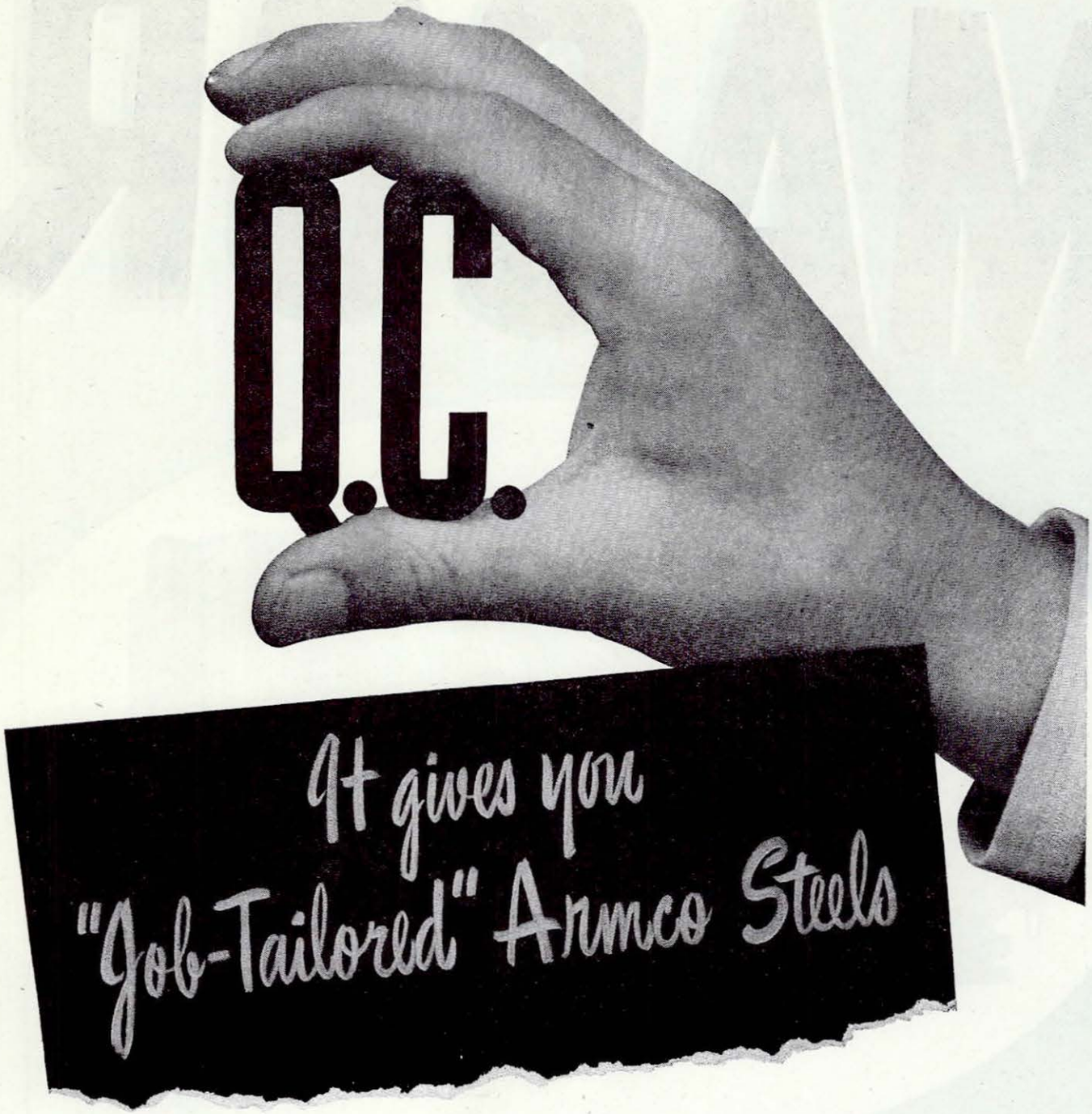


Designers and Manufacturers of Freight Cars of All Types Including Air Dump Cars...

MAGOR CAR CORPORATION

50 Church Street

New York 7, N. Y.



When mill-ordered Armco steel sheets or wrought steel wheels go into your equipment you can be sure of this:

The steel is "job-tailored" to your needs—*before* and *during* rolling operations. Salesmen, metallurgists, and mill representatives all see that you get the *one right steel* for your equipment.

For almost 20 years Armco men have called this "Q. C."—Quality Control. Metallurgists who study your requirements specify the analysis of steel, the temper rolling, annealing, and all other operations that affect the qualities of the finished steel. Then mill operators follow through with these instructions on your individual routing card.

In recent years Armco control charts and statistical analyses have further helped to assure consistent production of prime steels. "Quality Controls" like these are one reason why leading manufacturers look first to Armco for special-purpose sheet steels.

Back of it all is the research and experience that contribute to a higher "Q. C." at our end and better quality at yours. The American Rolling Mill Company, 3871 Curtis Street, Middletown, Ohio.

ARMCO

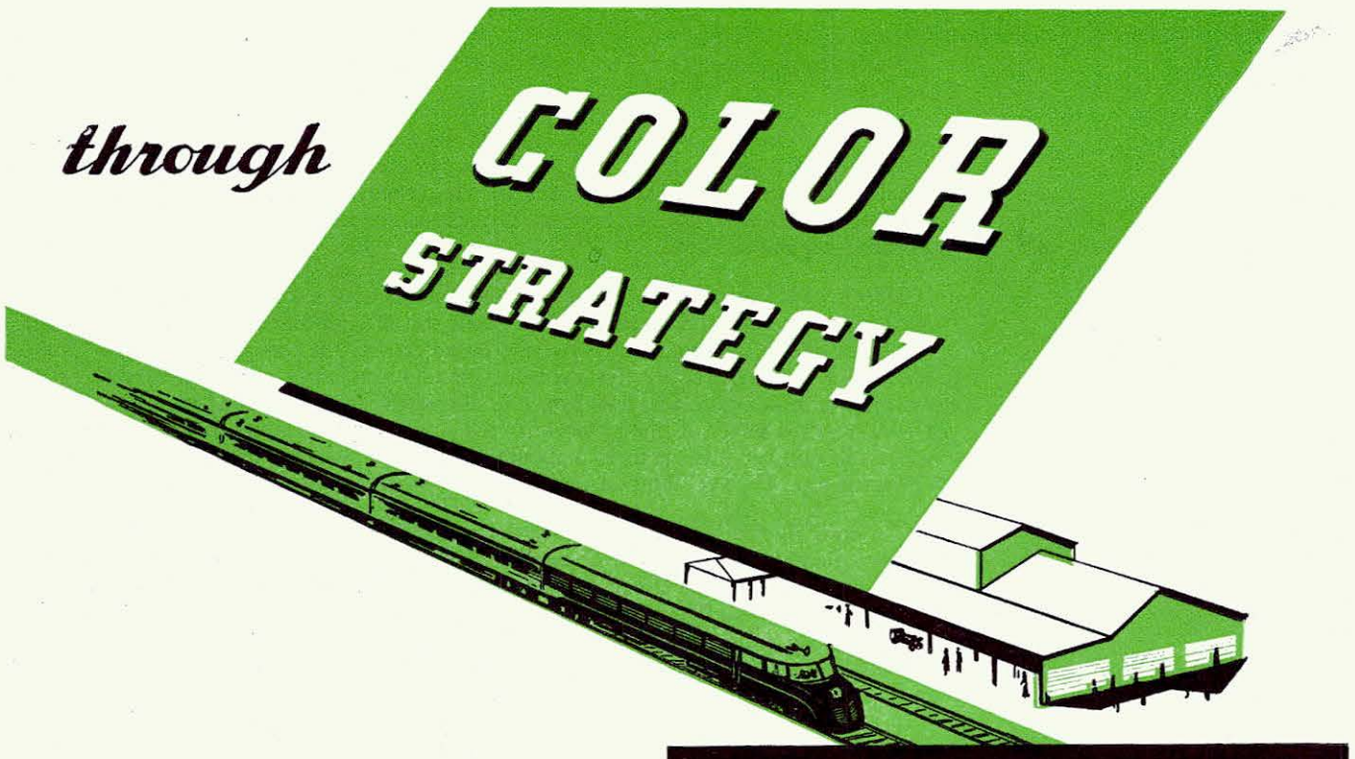
The American Rolling Mill Company

Special-Purpose Steels • Wrought Steel Wheels

SHOW YOUR COLORS

to best advantage

through COLOR STRATEGY



. . . ON LOCOMOTIVES, FREIGHT CARS, PASSENGER CARS, STATIONS—COLOR HELPS SELL TRANSPORTATION

THE SYMBOL OF COLOR AUTHORITY

planned by . . .

Glidden

Pacemaker in Paints

For color prescriptions or technical service on any railroad painting problem, write

The Glidden Company, Cleveland 2, Ohio.

Railroads Deserve Citizen Cooperation *says* *R. R. Rider*

(Number nine of a series)

Statistics bore me, yet I have to digest a lot of them. So to make them interesting I bring them down to my level.

The other day one of our marketing men brought me some railroad ton-mile statistics to illustrate a certain trend. They weren't quite clear so I told him to put them in terms of individuals by dividing them by the census totals for corresponding years. Looked at in that way, they told me a story about our improving standards, the effects of depressions, and so on.

Here's what I mean. Let's assume that each of us used a ton of various commodities —food, clothing, fuel, and so on in 1944. Your ton of stuff and mine had to travel over 5,300 miles by rail, and that shows you the broad territory it was gathered from. To appreciate how much better we live than our grandfathers, right after the Civil War this per capita ton-mile figure was less than 300. Rapid expansion doubled it in less than ten years—a hundred pages of history couldn't tell you more about our country's growth. By the 20's the number was up to four thousand; we were starting to ride high. From '26 to '29 it hit top. Then it slumped, and you know why.

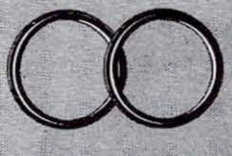
Ton-mile figures were high during the war, but everyone agrees that under ample prosperity they should be as big or bigger. And ample prosperity is going to depend a lot on whether the railroads can do the same kind of a job they did in the war. One thing is sure; they can't stay in shape for doing that job if they have to buck more and more unfair and subsidized competition. It's up to the people like you and me to fight this thing along with the railroads. Back them up—our own prosperity depends upon theirs.

Edgewater

Serving America's Railroads

RING SPRING DRAFT GEARS

ROLLED STEEL WHEELS



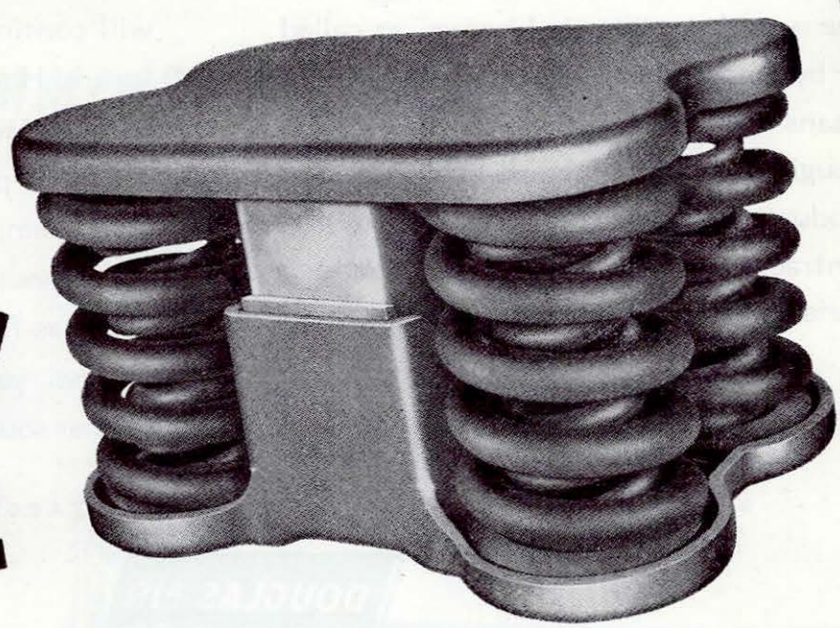
LOCOMOTIVE TIRES

EDGEWATER STEEL COMPANY · PITTSBURGH, PA.

Atlanta — Baltimore — Boston — Chicago — Cleveland — Kansas City — Louisville — New York
Philadelphia — St. Louis — St. Paul — San Francisco — Seattle — Washington, D. C.

For better performance, equip your ordinary freight car trucks with the new Ride-Control Package. Soft, long-travel springs and constant friction control cushion all bolster motion—*up, down, across-track;* protect lading, rolling stock, and roadbed; make existing equipment modern. For all types of cars; all loads; all *speeds.*

THE NEW A·S·F *Ride-Control* PACKAGE



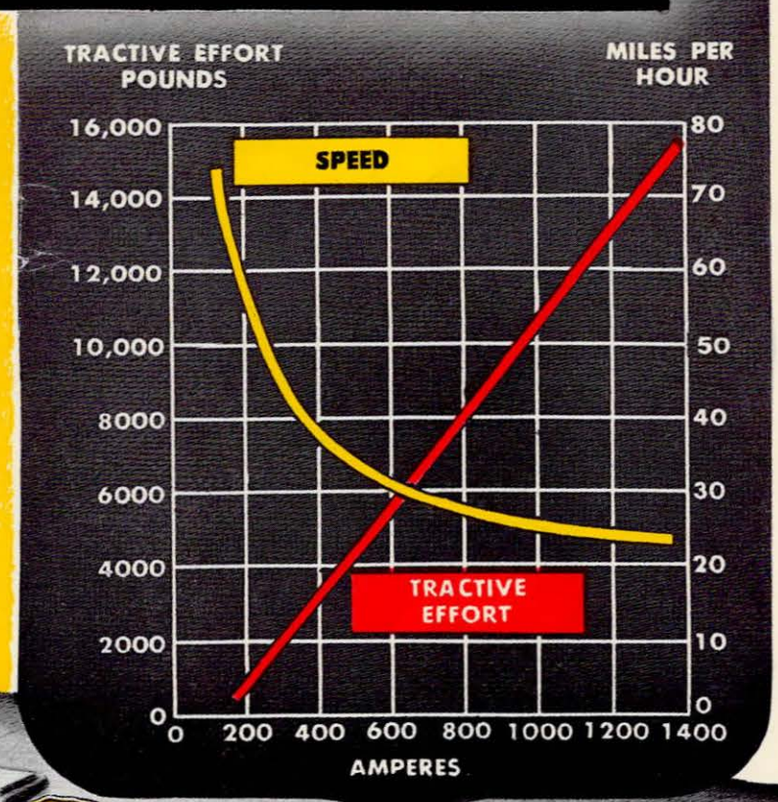
Ask your A.S.F. Representative for a Comparative Performance Report

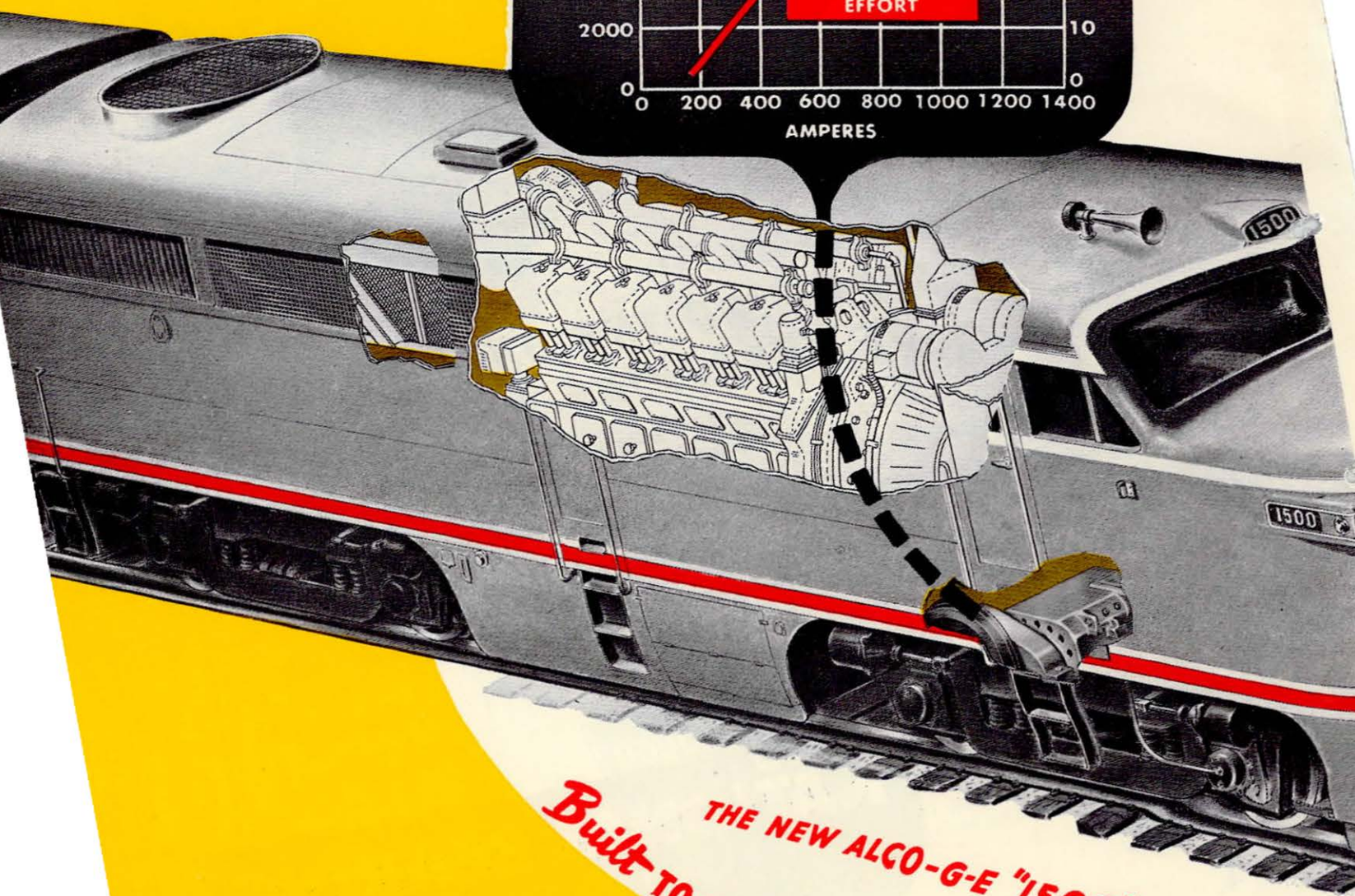
AMERICAN STEEL FOUNDRIES

MOTORED FOR TOP PERFORMANCE

The stamina and reliability of the GE-726 traction motor have been proved in service on major railroads in all parts of the United States. Its record on the New Haven is typical of the results.

Hauling 16-car passenger trains by day and 4500-ton freight trains by night between Boston and New Haven, 10 Alco-G.E. diesel-electrics ran up more than 10 million motor-miles before classified repairs. In fact their performance was such that the New Haven was able to materially increase the mileage between major overhauls. On regular schedule, these motors now run more than 10 times around the earth with only routine attention!



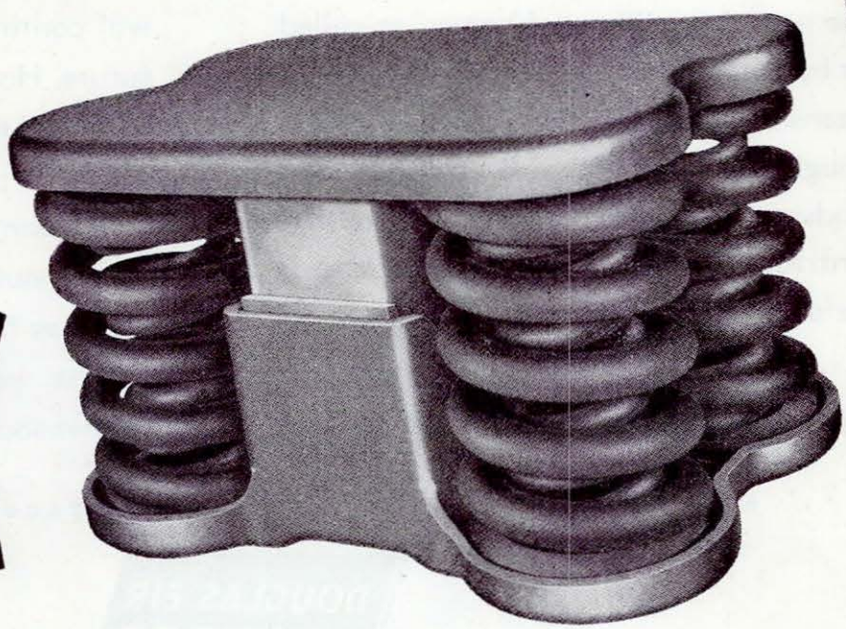


THE NEW ALCO-G-E "1500"

Built TO INCREASE RAILROAD EARNING POWER

For better performance, equip your ordinary freight car trucks with the new Ride-Control Package. Soft, long-travel springs and constant friction control cushion all bolster motion—*up, down, across-track;* protect lading, rolling stock, and roadbed; make existing equipment modern. For all types of cars; all loads; all *speeds.*

THE NEW A·S·F *Ride-Control* PACKAGE

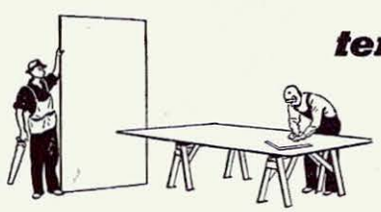


Ask your A.S.F. Representative for a Comparative Performance Report

AMERICAN STEEL FOUNDRIES

Reconversion Housing makes necessary the allocation of Douglas Fir Plywood

- - - - as a result the supply situation is being temporarily aggravated

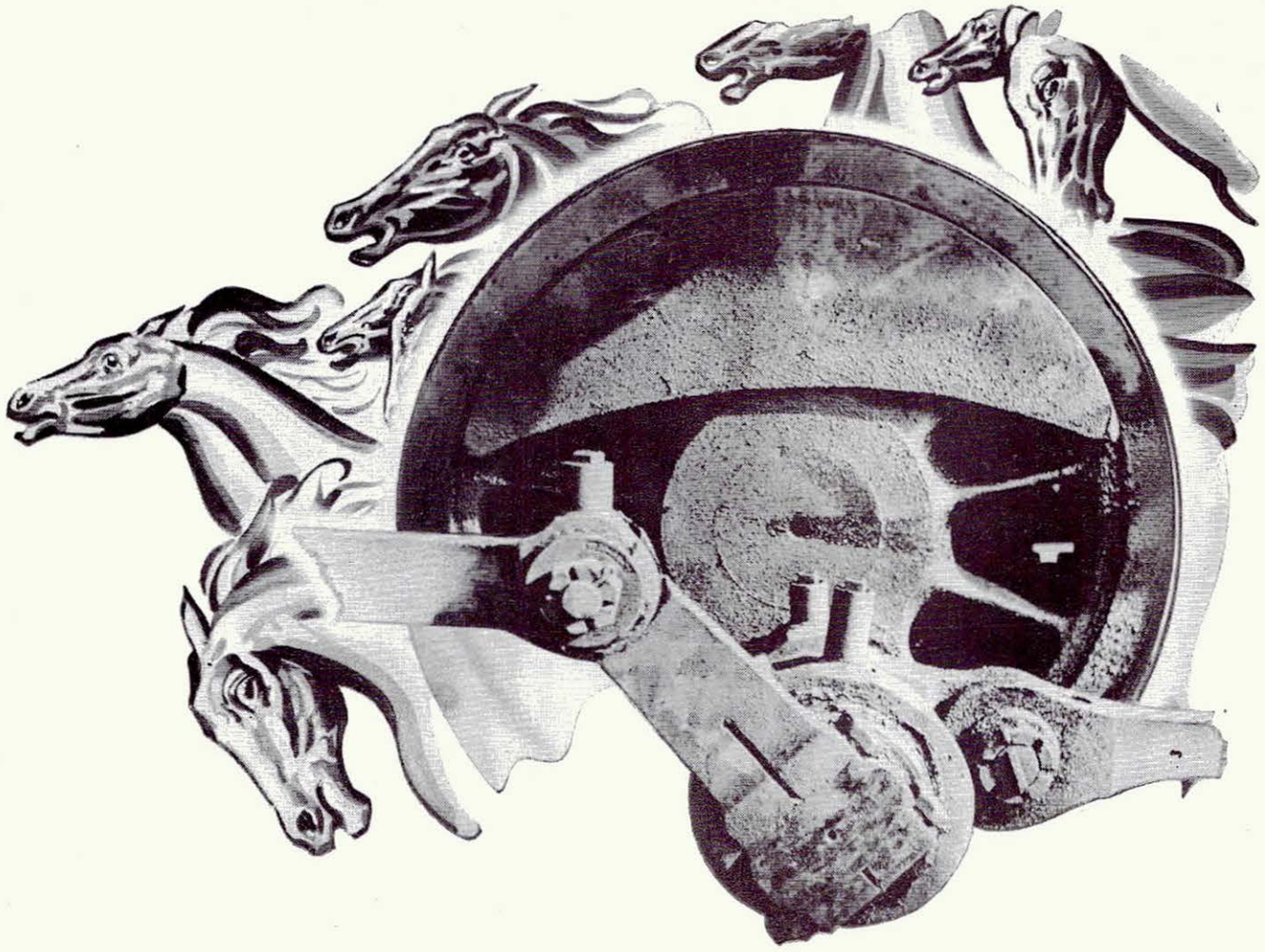


The need for millions of homes, as called for by the Reconversion Housing Program, means that a substantial proportion of the Douglas fir plywood industry's current production is being allocated to housing contractors, stock cabinet manufacturers, prefabricators and distributors.

As a result, the supply situation for all other industrial and construction uses will continue difficult in the immediate future. However—more plywood is being produced today than in pre-war years, and once the present overwhelming demand for housing has subsided, supply for all users should be adequate. Anticipate your needs as far in advance as possible—and discuss your requirements with your regular source of supply.

DOUGLAS FIR PLYWOOD ASSOCIATION • TACOMA 2, WASHINGTON

Although Douglas fir plywood is critically short today, it is almost indispensable for many projects—for concrete form work, for signs and displays, for boat building, for railroad car construction, and for scores of other industrial and commercial uses. In such cases it is well worth waiting for. It saves time and labor—does a better job.



STEMMING THE ONSLAUGHT OF THRASHING HORSEPOWER

. . . and delivering it to maximum tractive efficiency . . . that's what N-B-M Main Rod Bushings are made for.

We've met the challenge with new alloying and pouring techniques that produce rod bushings with stamina to spare.

The tougher the job, the better you will like their performance.

N·B·M
ROD BUSHINGS, BEARINGS and CASTINGS

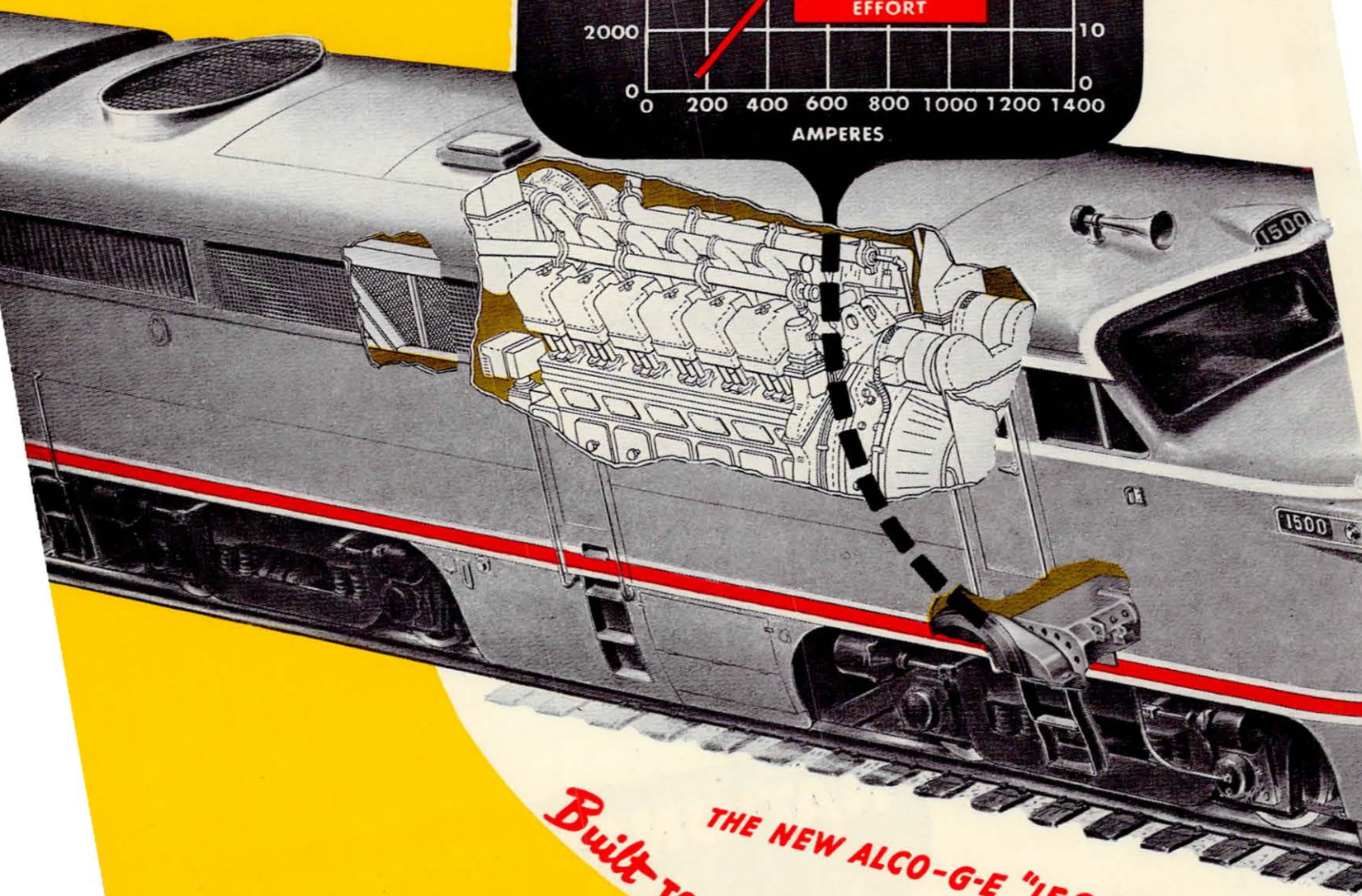
NBM
NATIONAL BEARING
DIVISION
ST. LOUIS • NEW YORK
AMERICAN Brake Shoe COMPANY

PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

MOTORED FOR TOP PERFORMANCE

The stamina and reliability of the GE-726 traction motor have been proved in service on major railroads in all parts of the United States. Its record on the New Haven is typical of the results.

Hauling 16-car passenger trains by day and 4500-ton freight trains by night between Boston and New Haven, 10 Alco-G.E. diesel-electrics ran up more than 10 million motor-miles before classified repairs. In fact their performance was such that the New Haven was able to materially increase the mileage between major overhauls. On regular schedule, these motors now run more than 10 times around the earth with only routine attention!



THE NEW ALCO-G-E "1500"

Built TO INCREASE RAILROAD EARNING POWER

FEWER locomotives haul MORE trains faster

To help you increase the earning power of your road in spite of stiffer competition from other carriers, the new 1500-hp Alco-G.E. diesel-electric performs two vital services. It makes it possible to increase sales by greatly improving schedules, and it makes it possible to turn a larger portion of the revenue from these sales into net profit by reducing motive-power investment and operating cost.

In this great new locomotive, the already high inherent availability and speed of the diesel-electric have been increased to such an extent that railroads can further reduce the number of locomotives required and still improve service to shippers.

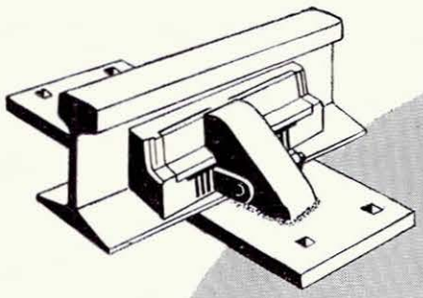
Such availability and speed are the result of a complete new design that includes a powerful, 12-cylinder diesel engine, constant-pressure turbosupercharger, specially developed generator, power plant regulating system, and engine cooling system. And converting all this surging power into tractive effort is a superb motor which has proved in millions of miles of service that it has the rugged characteristics on which depend the handling of more trains at faster speeds with fewer locomotives.

The unusually high continuous and short time tractive rating of this GE-726 traction motor allows you to haul more tonnage over a given profile. Optional gearing permits you to select the range of speed best suited to your operating conditions. The combined result is a motor—and a locomotive—that will enable you to move more tons over greater distances in less time and enable you to get more work from fewer motive power units. The "1500" is *really built to increase railroad earning power.*

Alco GE

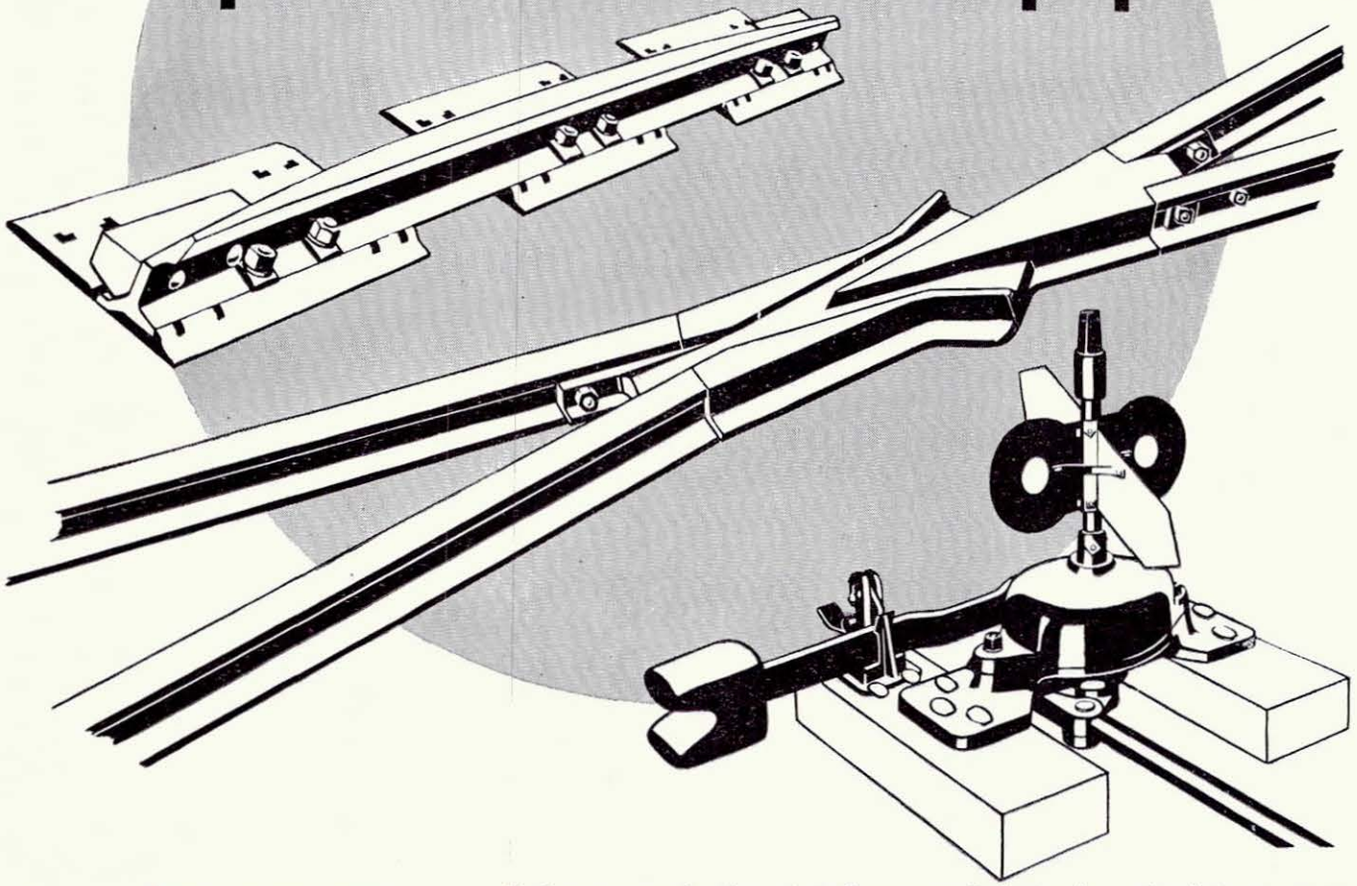
AMERICAN LOCOMOTIVE AND GENERAL ELECTRIC

113-171-9580



BETHLEHEM STEEL

Headquarters for Track Equipment



Some of BETHLEHEM'S
TRACK PRODUCTS

BOLTS AND NUTS
CROSSINGS · FROG PLATES
FROGS · GAGE RODS
GUARD RAILS
JOINT BARS · RAIL BRACES
RAILS · SPIKES · SWITCHES
SWITCH HEATERS
SWITCH STANDS
TIE PLATES

Spikes or guard rails . . . joint bars or switch stands . . . tie plates or crossings . . . whatever you need in track equipment, Bethlehem makes it.

No item too small, no item too large. Maybe it's rail braces. Maybe it's a complete layout for yard or terminal. Maybe only a few bolts and nuts. If it's for track, see Bethlehem—and get what you want.

Here at Bethlehem, we've been shoulder-to-shoulder with the railroad industry for many years. Our research engineers carry on a continuous study of the industry's needs, and their findings take shape in the most modern, up-to-the-minute track equipment.

Remember—whether it's a standard item or a special job designed to your own specifications, we are equipped to handle it for you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

OTHER BETHLEHEM PRODUCTS FOR THE RAILROADS { Alloy Steels . . . Boiler and Firebox Plates . . . Bridges . . . Freight Cars Locomotive Forgings . . . Mayari R (high-strength, low-alloy steel) . . . Transmission-Line Towers . . . Tool Steels . . . Tubular Products . . . Wheels and Axles

the first Semaphore!

Once upon a time this "Semaphore" was modern

YES, back in the 1800's, railroad men were mighty proud of this "new" safety device — and rightly so . . . but railroad thinking and equipment have come a long way since that time • So have we at Air Reduction. Today the Airco Plan — which incorporates the latest oxyacetylene practices — helps you cut costs . . . increase oxyacetylene process efficiency . . . and use to the fullest extent the specialized "know how" of your own maintenance men. It is today's most helpful plan for economically keeping rolling stock and roadways in top operating condition.

AIRCO **AIR REDUCTION**

60 East 42nd Street, New York 17, N. Y.

HOW MUCH COMFORT IN A CARLOAD?

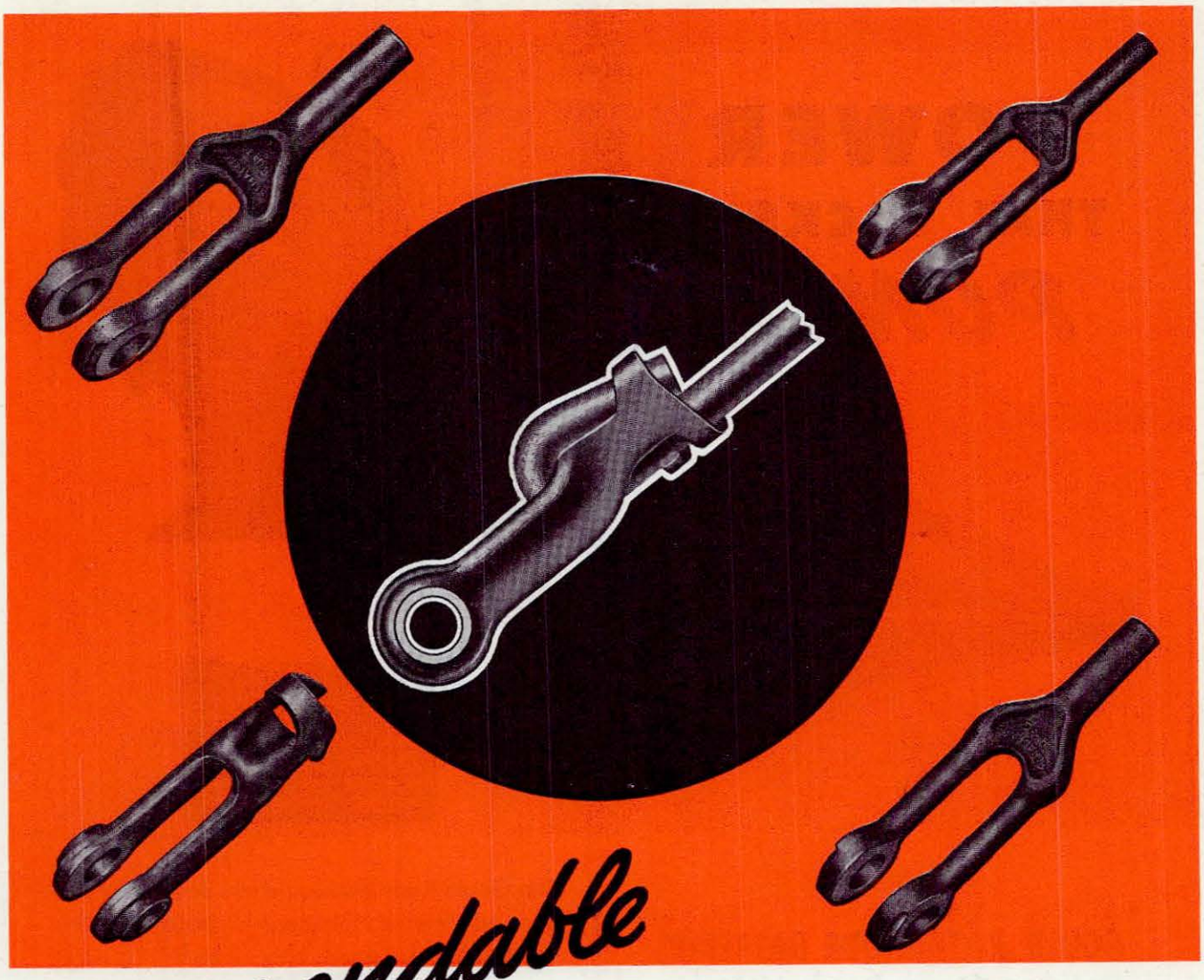
When travelers "took the cars" to Albany or Philadelphia; when gas burners illuminated plush-seated, tassel-shaded coaches and a stove at the end of the car gave forth its uncertain warmth, railway travel was an experience that made up in novelty and excitement for its lack of present-day comforts.

As "taking the cars" became the natural and accepted way to move about, railway management occupied itself more and more with the *comfort factor* in travel. The 60-year experience of Safety Company has covered many significant, pioneering developments in railway equipment and service—all aimed at increasing comfort in rail travel; permitting more efficiency in railway operation and maintenance.

In Safety Company car-lighting, generator equipment and air conditioning systems, the *comfort factor* has led to successive improvements in design and operating methods. Safety Company's pioneering spirit, practical experience and understanding of railway requirements offer assurance that you will continue to get the best when you *"STANDARDIZE WITH SAFETY."*

THE SAFETY CAR HEATING AND LIGHTING COMPANY INC.

NEW YORK · CHICAGO · PHILADELPHIA · ST. LOUIS · BOSTON · SAN FRANCISCO · MONTREAL



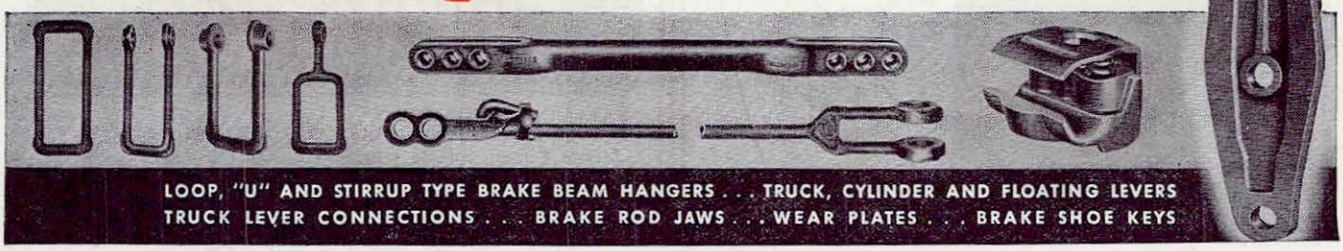
Dependable Jaws

Forged by Schaefer to develop in every part of the jaw the full strength of the Brake Rod.

Write for Catalog No. 445

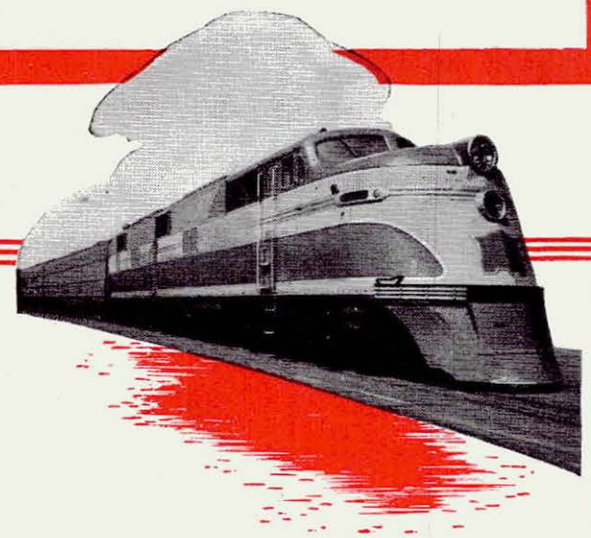
Schaefer EQUIPMENT COMPANY

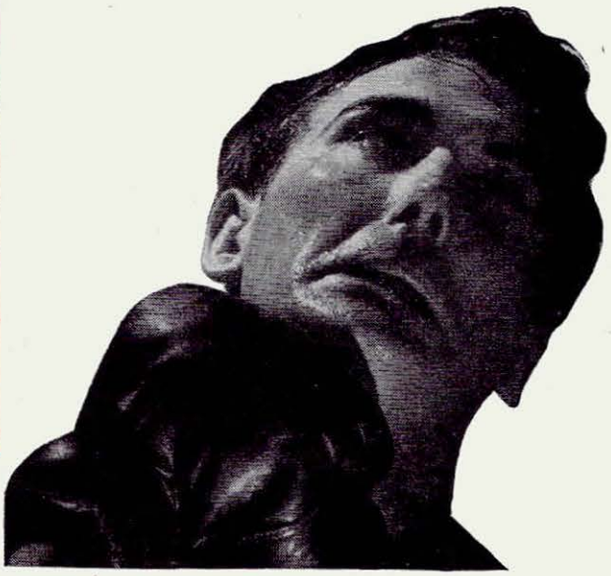
KOPPERS BUILDING • PITTSBURGH, PA.



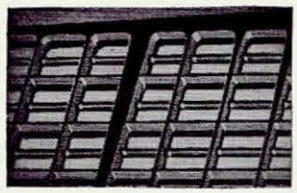
LOOP, "U" AND STIRRUP TYPE BRAKE BEAM HANGERS . . . TRUCK, CYLINDER AND FLOATING LEVERS
TRUCK LEVER CONNECTIONS . . . BRAKE ROD JAWS . . . WEAR PLATES . . . BRAKE SHOE KEYS

POWER
THAT PACKS A
PUNCH





Here's a Reason why



GOULD KATHANODE BATTERIES
Deliver More Peak Voltage

Gould Kathanode Batteries have the punch required to start Diesel engines. Even under the severe conditions of railway locomotive operation, they will continue to deliver starting power for their entire service life.

THE BATTERY PICKED BY ENGINEERS

The Gould Kathanode grid has double-wedge shaped members that securely hold the active material, yet expose only a knife-like edge to surface erosion. Grids are tapered at the top for extra conductivity that delivers more power at the terminals.

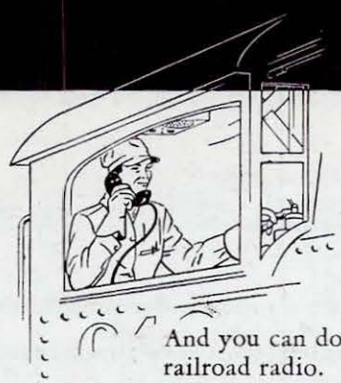
This grid is an exclusive Kathanode feature that provides more power and longer life. For all the facts write Dept. 157 for Catalog 700 on Gould Kathanode Batteries for Diesel Locomotive Service.

GOULD
GLASSKLAD CONSTRUCTION
KATHANODE

GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.
Service Centers: Atlanta • Boston • Buffalo • Chicago • Cincinnati
Cleveland • Detroit • Kansas • Los Angeles • New York
Philadelphia • Pittsburgh • Portland • St. Louis • St. Paul
San Francisco

how you can use railroad radio

to boost profits



To cut operating costs is a solid, sure-fire way to give a healthy boost to your net profits. And you can do it with Westinghouse railroad radio.

Examples: elapsed time from starting point to destination of many freight trains can be slashed from 10 to 15% with railroad radio. Switching time in classification yards has been cut by 16% and more.

Westinghouse railroad radio gives you instant, 3-way communication between engine and caboose, another train, a wayside point or terminal. It is as easy to operate as the telephone itself. Improved FM circuits and automatic controls assure noise-free communication. The system needs no wayside wires. The unit is designed for maintenance simplicity . . . electrically and mechanically. Standardization reduces spare part requirements.

For more than 20 years, Westinghouse has designed railroad radio exclusively for railroads, and Westinghouse radio experience—in both design and operation—is unmatched by any other manufacturer.

Railroads and Westinghouse have worked together more than 60 years in developing new ideas in transportation, and railroad radio promises to be one of the best for producing more profits. Get all the facts from your Westinghouse office. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-08150

Westinghouse Railroad Radio
Electronics at Work

Tame THOSE HARD-TO-OPEN END DOORS WITH NP AUTOMATIC END DOOR OPERATORS

MAKE the end doors obedient to your passengers' fingertouch—with N. P. automatic operators. No more pushing and pulling! Obstinate end doors open and close effortlessly and safely.

N. P. automatic operators are available for either swinging or sliding doors. They're mounted out of sight. Doors respond promptly the instant the latch is released. There's no pressure build-up . . . no slamming. Door motion reverses automatically at a touch of interference. And the action is timed to prevent unnecessary loss of conditioned air.

Write today for full information.

NATIONAL PNEUMATIC COMPANY

GRAYBAR BLDG., NEW YORK • McCORMICK BLDG., CHICAGO • RAHWAY, N. J.

Distributed in Canada by Railway & Power Engineering Corp., Ltd.

WORLD'S LARGEST BUILDER OF DOOR CONTROL EQUIPMENT

FOR MASS TRANSPORTATION VEHICLES

Red Lead is
ALWAYS Pb_3O_4... *that's why*
it's a Dependable Metal Paint

Industry has yet to discover a better metal protective paint than Red Lead. This is due to inherent fundamental properties of the pigment itself.

Among the most important of these are Red Lead's definite chemical composition and its purity, as distinguished from pigments that have indefinite composition or vary from batch to batch, with resulting possibility of variation in performance.

The reason for this uniformity is that red lead is a simple chemical compound—a combination of only two elements, oxygen and high-purity metallic lead. It is also an extremely pure compound, containing no corrosion accelerating impurities such as water-soluble chlorides or sulfates.

Uniform performance means predictable chemical behavior—dependable performance as a rust-inhibitive paint, day after day, job after job.

Furthermore Red Lead has the property of controlling acid conditions recognized as accelerators of rust. In the presence of various acids, Red Lead forms insoluble lead salts, at the approximate rate at which the acids are supplied. This is true whether the acids originate from acid forming environments, such as gas, smoke, and moisture in the atmosphere, or from the oxidation of the paint vehicle.

Remember, too, that Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including all the fast drying resins.

Specify RED LEAD
for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint. No matter what price you pay, you'll get a better paint for surface protection of metal if it contains Red Lead.

***These spectograms** show the high degree of uniformity and purity of nine different batches of Red Lead. Each spectrum is a practical duplicate of every other. Such uniformity is an important reason for Red Lead's outstanding performance.*

* * *

Write for New Booklet — "*Red Lead in Corrosion Resistant Paints*" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas. If you haven't received your copy, address nearest branch listed below.

* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

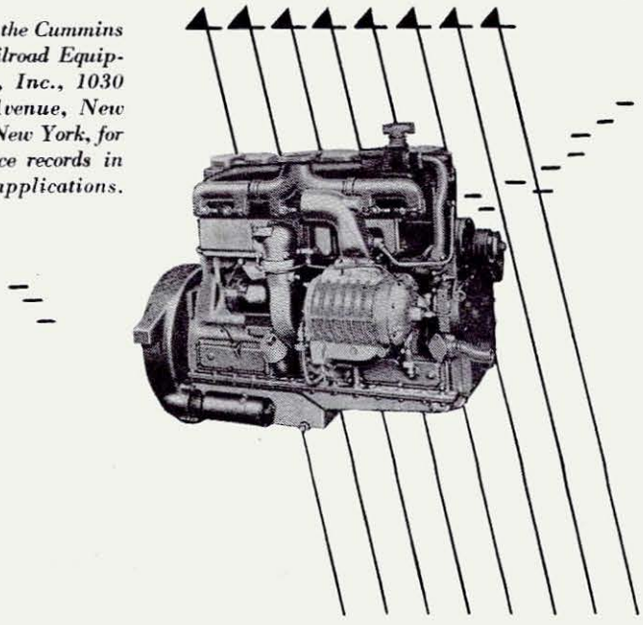
NATIONAL LEAD COMPANY: New York 6, Buffalo 3, Chicago 80, Cincinnati 3, Cleveland 13, St. Louis 1, San Francisco 10, Boston 6 (National Lead Co. of Mass.); Philadelphia 7 (John T. Lewis & Bros. Co.); Pittsburgh 30 (National Lead Co. of Pa.); Charleston 25, W. Va. (Evans Lead Division).

Dutch Boy
Red Lead

A sound investment in power . . . proved on countless jobs such as yours.*

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

** Consult the Cummins Diesel Railroad Equipment Co., Inc., 1030 Leggett Avenue, New York 55, New York, for performance records in railroad applications.*



THE NEW "D-R" V-BELT HELPS SPELL C-O-M-F-O-R-T FOR FOOD BAR CAR PATRONS

Raiding the icebox is a leading "sport". Delightful facilities for it are made available to travelers of trains with Food Bar Cars like the one shown here.

But the "icebox" in this case must have adequate, dependable, efficient power. So must this car's air conditioning and lighting systems. This means a Dayton "D-R" V-Belt Axle Drive—the drive that's used on over twice as many air-conditioned cars as any other type of under-car drive.

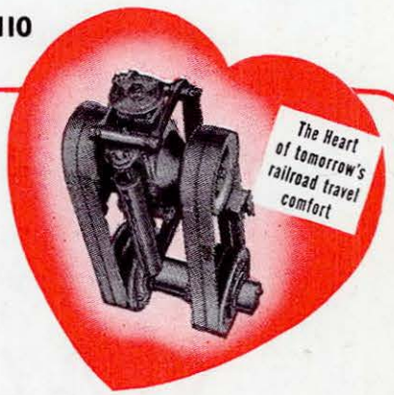
And this drive is now equipped with a vastly improved belt—the new Dayton "D-R" V-Belt. It will deliver well over 150,000 miles of trouble-free service in all kinds of weather and in spite of dusty, muddy or icy conditions. This performance is possible because war-born research developed improved compounds, stronger fabrics and advanced construction principles.

To get the complete story of this new belt and what it will contribute to your passenger car equipment, write for the services of a Dayton Railway Specialist.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON 1, OHIO

Advantages of the Dayton "D-R" V-Belt Axle Drive

1. Quiet and smooth performance with high availability—in 15 years a mechanical failure due to V-Belts has never been reported.
2. Provides a flexible, cushioned connection between the car axle and the driven unit that protects generators and other equipment should a mechanical failure occur.
3. It is convenient and economical to install . . . no complicated or expensive truck changes are necessary . . . no special axles are necessary.
4. Duplicate equipment is not necessary to take care of emergencies—when wheel changes must be made, only the axle pulleys need to be removed.
5. It greatly reduces maintenance cost on mechanical equipment as well as on the drives.
6. It imposes a minimum weight on the car axle.
7. Easy and simple to install, dependable in operation, and insures uninterrupted performance.



Railroad V-Belts by **Dayton Rubber**

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

STOP

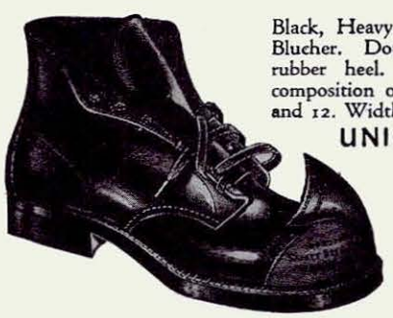
LOOK

LISTEN

On some twenty-three railroads in the United States our steel toe safety shoes can be purchased in the railroads' company stores on a pay roll deduction plan. If the railroad where you are employed is one of those having our service, you will find the right shoe for your job made of the right materials to give WEAR and also a correct fit to give COMFORT. Ask your nearest Railroad Stores Department for information.

***Shoes for* TRACKMEN — WAREHOUSEMEN — SHOPMEN — TRAINMEN — FOREMEN**

HEAVY OUTSIDE WORK



Black, Heavy, Work-Shoe Leather Blucher. Double leather outsole, rubber heel. Also available with composition outsole. Sizes 5 to 11 and 12. Widths D, EE.

UNION MADE

Safety First SHOE COMPANY

HOLLISTON, MASSACHUSETTS

Makers of Industrial Shoes for a Half Century

Give Your Seating this Permanently

Buoyant Action

on LAND on SEA and in the AIR

TRAVEL COMFORT* CUSHIONS

with

TRAVEL COMFORT CUSHIONS*

● You can have any type of cushioning top-pads on TRAVEL COMFORT CUSHIONS.

No other method of cushioning can ever equal the buoyant action of Travel Comfort Cushions, which combine superior spring constructions with types of cushion top-pads most suitable for each specific use.

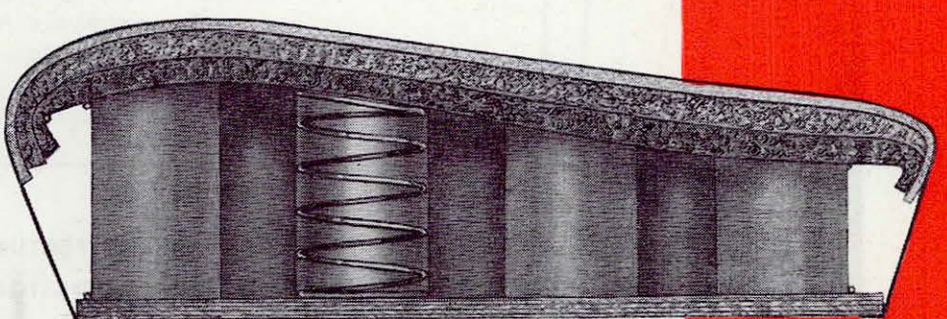
Travel Comfort Cushions are carefully engineered for each job they are to perform. Travel Comfort Cushions for one particular task may not be recommended for a different application.

Because they are so carefully designed and produced under strict supervision, with the highest grade of materials obtainable.

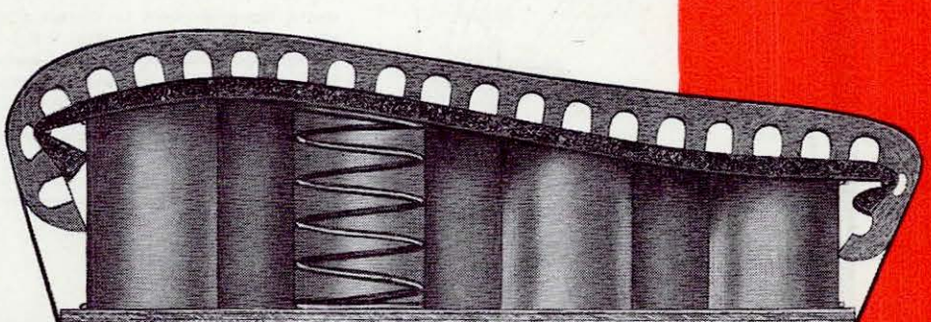
TRAVEL COMFORT CUSHIONS* are

Fully Guaranteed

— to give maximum comfort and trouble-free service. They are being specified for seating by buyers for leading rail, bus and transit systems. May we explain to you, fully?



You can have any type of top-pads you want on your Travel Comfort Cushions: Curled hair, rubberized hair, vegetable fibres, synthetic rubber, natural and synthetic rubber combinations and numerous other filler materials.



- Cool Comfort
- Floating Comfort
- Permanently Beautiful

*Trade Mark

TRAVEL COMFORT CUSHIONS *Ideal for* Train or Plane, For Bus or Truck, For Transit Cars or Cabs

McINERNEY SPRING AND WIRE COMPANY

Factories: Grand Rapids, Michigan, and Passaic, New Jersey

SALES OFFICES: 661 Godfrey Ave., S. W., Telephone 6-1481, GRAND RAPIDS

CHICAGO — 205 W. WACKER DRIVE — FRAnklin 5780

DETROIT — 911 FISHER BUILDING — MAdison 4425

3 ADDITIONAL SPEECH CHANNELS ON YOUR PRESENT LINE

. . . with FEDERAL's 9-B-1 Carrier Telephone System

THREE, *high-grade* telephone channels are added to your open wire line with Federal's 9-B-1 carrier. At a *fraction* of your original pole line construction costs, you get *four* times the message capacity on up to 200 miles of line. (With properly spaced repeaters, its range is practically indefinite.)

Engineered to finest communication standards, this carrier terminal affords an ease and dependability of operation that makes it especially valuable to telephone, railroad and pipe line companies. A Federal engineer will be glad to give you full details. Write Department H447.

3 SUPERIOR FEATURES OF FEDERAL DESIGN

Automatic Pilot Control!—Regardless of weather or temperature changes, top performance is assured. Transmission level and flat gain frequency characteristics are maintained by *automatic pilot regulation.*

Maximum Accessibility!—All components which may require adjustment or maintenance are front-of-panel mounted. Inert components such as transformers, filters, capacitors are mounted at the rear, and are hermetically sealed, with glass sealed terminals for untroubled service.

Compact! Saves Rack Space!—Small components, more resistant to vibration and damage, are combined in the Federal 9-B-1 in a space-saving setup. Complete terminal, including power supply and line and directional filters, mounts on one standard 19″ relay rack, 8′ 6″ high.

Write for technical bulletin for full data.

Federal Telephone and Radio Corporation

An IT&T Associate

Newark 1, New Jersey

In Canada:—Federal Electric Manufacturing Company, Ltd., Montreal

Export Distributor—International Standard Electric Corporation

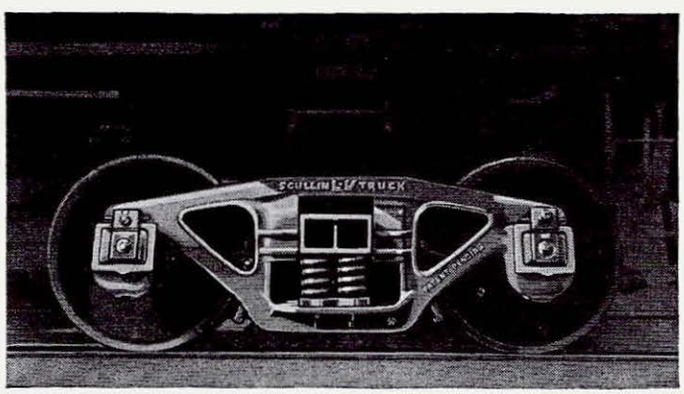
FREIGHT CARS WITH "SLEEPER" SMOOTHNESS...

The New

SCULLIN L-V **TRUCK**

LATERAL-VERTICAL CUSHIONED MOTION

TAKES THE "SWING AND SWAY" OUT OF YOUR FREIGHT



Designed to make higher speeds really *safe* for lading, cars and roadbed. Completely controls and cushions all lateral and vertical motion—necessary to provide ultimate riding qualities.

• Simple, trouble-free, easy to maintain • Eliminates lateral impacts • Maintains constant controlled truck alignment • Comparable to conventional freight car trucks in both price and weight • For complete details write:

ARMY NAVY

SCULLIN STEEL CO

SAINT LOUIS 10, MISSOURI

STEEL CASTING MANUFACTURERS SINCE 1899

NEW YORK • CHICAGO • PHILADELPHIA • CLEVELAND • ST. PAUL • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.

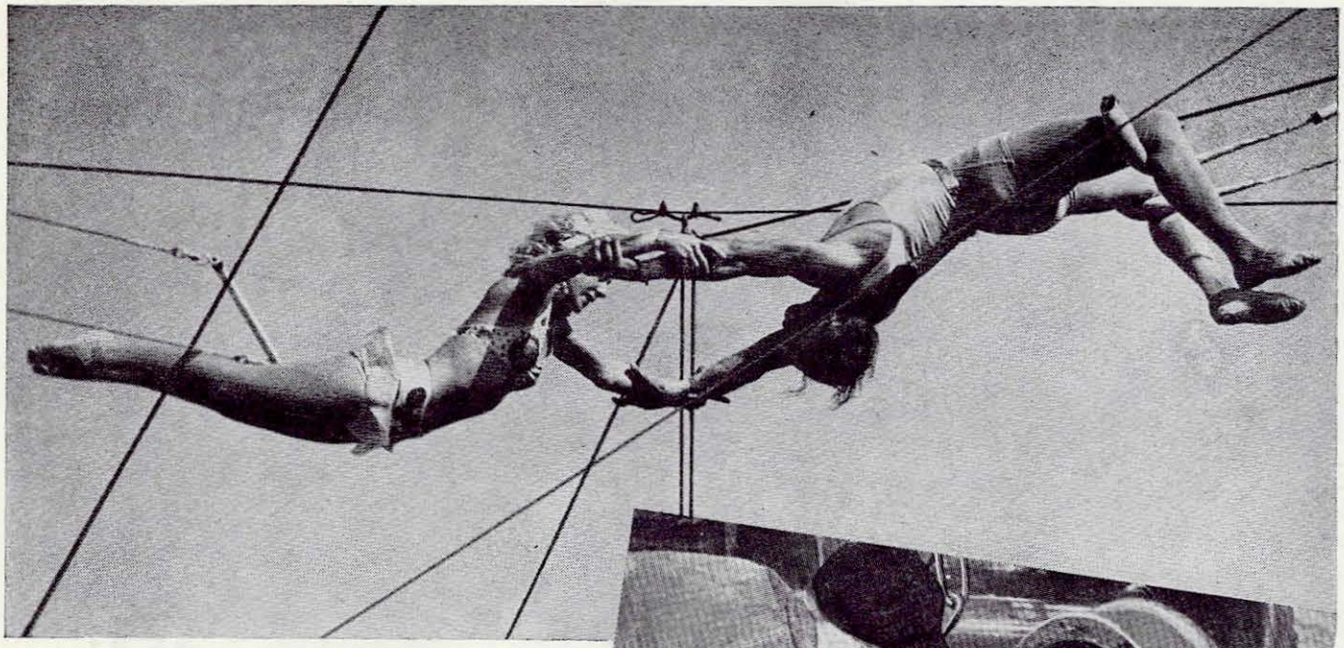


Photo: Ringling Brothers, Barnum and Bailey

WITH GREATEST EASE!

REMEMBER how easily the trapeze team did its spectacular finale? A quick glide through the air and it was over before you knew it.

Shop men have learned from experience that when Hyatt Roller Bearing Railroad Journal Boxes are used, the cleaning and inspection of journal boxes and bearings can also be done "with greatest ease."

The straight cylindrical construction of Hyatt Railroad Roller Bearings makes it possible to remove Hyatt Journal Boxes from car axles — easily — quickly — and without special tools. Wheel work is greatly simplified and maintenance costs are noticeably reduced.

This is only one of the many outstanding features of Hyatt Railroad Journal Boxes. If you are planning the purchase of new cars or the changeover of existing equipment, the Hyatt engineering staff can be of assistance to you. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARING RAILROAD JOURNAL BOXES

Railway Age

With which are incorporated the Railway Review, the Railway Gazette, and the Railway Age-Gazette. Name registered in U. S. Patent Office.

Vol. 121 July 20, 1946 No. 3

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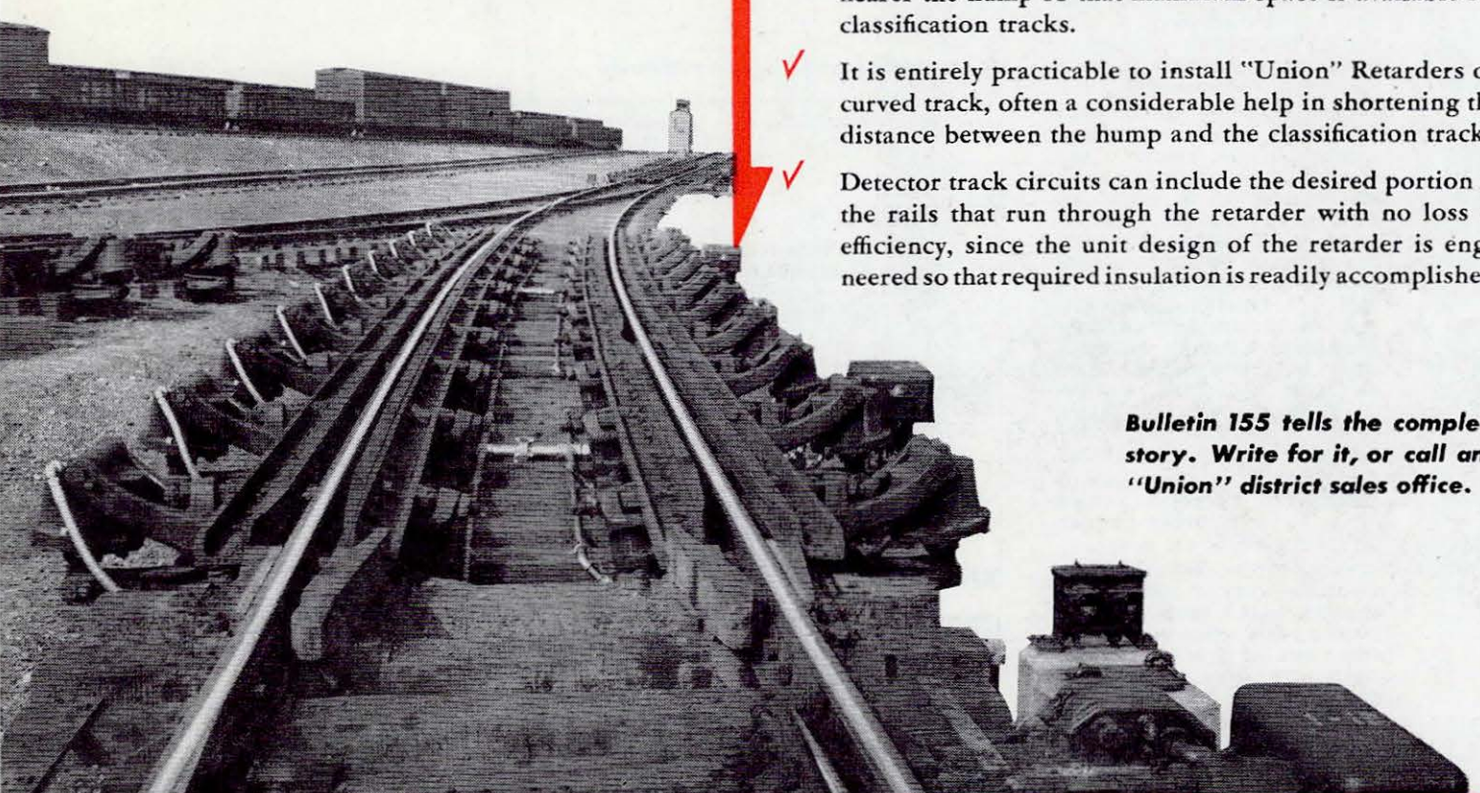

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pensable. The country cannot live without it. At the same time, the continued functioning of this essential tool is endangered by political and sociological difficulties. The author of this book tells what these difficulties are, and illustrates the points he makes by showing how General Motors is trying to solve them, and how it might here and there do a better job than it is doing. While, in detail, these difficulties are not exactly the same for a manufacturer as they are for a railroad—in essence they are identical for all large enterprise. We know of no more suggestive and helpful reading matter for the responsible heads of any large business—and for their public relations and personnel executives. Whether enterprise under private ownership and management can survive or not may very well depend on how thoroughly and quickly the lessons set forth in this book are grasped and acted upon.

Equipment Failures and Train Delays

As aptly expressed in a committee report of the American Association of Railroad Superintendents, dated April, 1946, "Railroad operation breathes through the clock." Time is an integral part of railroad functioning and so much attention was given to this factor in the past that a tradition of on-time performance developed and some people even checked their watches and clocks by the passing of certain trains.

This tradition is less firmly held today than formerly, or in other words prior to World War I. In the 1920's, faster schedules, longer and heavier trains, more complicated motive power and many more mechanical and electrical operating parts of car equipment increased the possibility of failures. During the next decade from 1930 to 1940, the railroads, like most other industries and individuals, were under heavy pressure to economize and there is no question that inspection and maintenance work were reduced to a minimum at some sacrifice in on-time performance.

With increased earnings during World War II, a higher degree of inspection and maintenance was feasible, financially, but shortages of both materials and labor introduced difficulties. Old and retired equipment, pressed into service in response to urgent demands, was of course less reliable than more modern types. All records for traffic handled in both freight and passenger service were broken, but often at the expense of disrupted schedules and late trains, which the public accepted more or less cheerfully under war conditions but will hardly tolerate now that the emergency is over.

In the field of reliable, on-time transportation service, railroads have one of the finest opportunities to impress the public favorably and exceed their competitors on both the highways and airways, the latter in particular being subject to delays on account of weather, cancelled flights and sometimes the delivery of lading or passengers miles away from the expected destination. Redoubled efforts are therefore in order to restore and strengthen the earlier tradition of trains operating on schedule, even in spite of highly adverse conditions.

Space is not available here even to mention all the causes of train delays. Needless to say, the records should be accurately kept and analyzed on individual roads with the greatest care, as is now generally being done. According to the superintendents' committee report referred to, equipment failures are the largest single contributing factor in train delays and, in one study of through main-line passenger-train service for a period of 12 months, were responsible for 23,012 minutes, or 27.4 per cent of the total delays. Locomotives and cars were almost equally chargeable with these delays.

When a modern streamliner or manifest freight train is observed passing a station or highway crossing at high speed and consideration is given to the tremendous energies involved, as well as the multiplicity of mechanical details which *might* get out of order and cause trouble, the great wonder is that so many of these trains operate day after day without schedule delays of any appreciable amount. This result is a definite tribute to the material suppliers, designers, builders, maintainers and operators of railway rolling stock.

One suggestion which may be emphasized as a means of increasing the number of miles per equipment failure, in case it is low, is the development of more uniform procedure in recording and analyzing train delays and defining just what constitutes a locomotive or car failure. In this way, various divisions on the same railroad can be encouraged to develop a healthy rivalry in reliable performance and individual railroads can also make valuable comparisons with each other if they use the same terminology and the same measuring units.

To effect maximum improvement, probably major credit should be awarded for the discovery and correction of primary causes of equipment failures rather than the juggling of figures to make a favorable showing on paper, as has sometimes been done in the past. In other words, if both steam and Diesel locomotive miles per failure have decreased substantially in the past three years, as has happened on more than one road, it is more helpful to accept the fact, publicize it (among railroad men responsible) and correct it than to alter definitions and figures in such a way as to make a favorable record on paper.

A Century of Cooperation

Despite criticism from some quarters that the American railroads have failed to advance technologically as fast as other industries, there are those who both believe and demonstrate to the contrary. These include the large group of railway supply companies that have studied and helped solve railroad problems for more than a century.

A factor in railroad technological progress not often noted by its critics is the close cooperation and mutual understanding existing between railway officers and equipment and supply manufacturers. An arrangement which may appear peculiar to some industries, but one that is common and remunerative practice on numerous railroads, is the habit railway officers have of consulting supply company representatives in working out their problems. A typical example of this close

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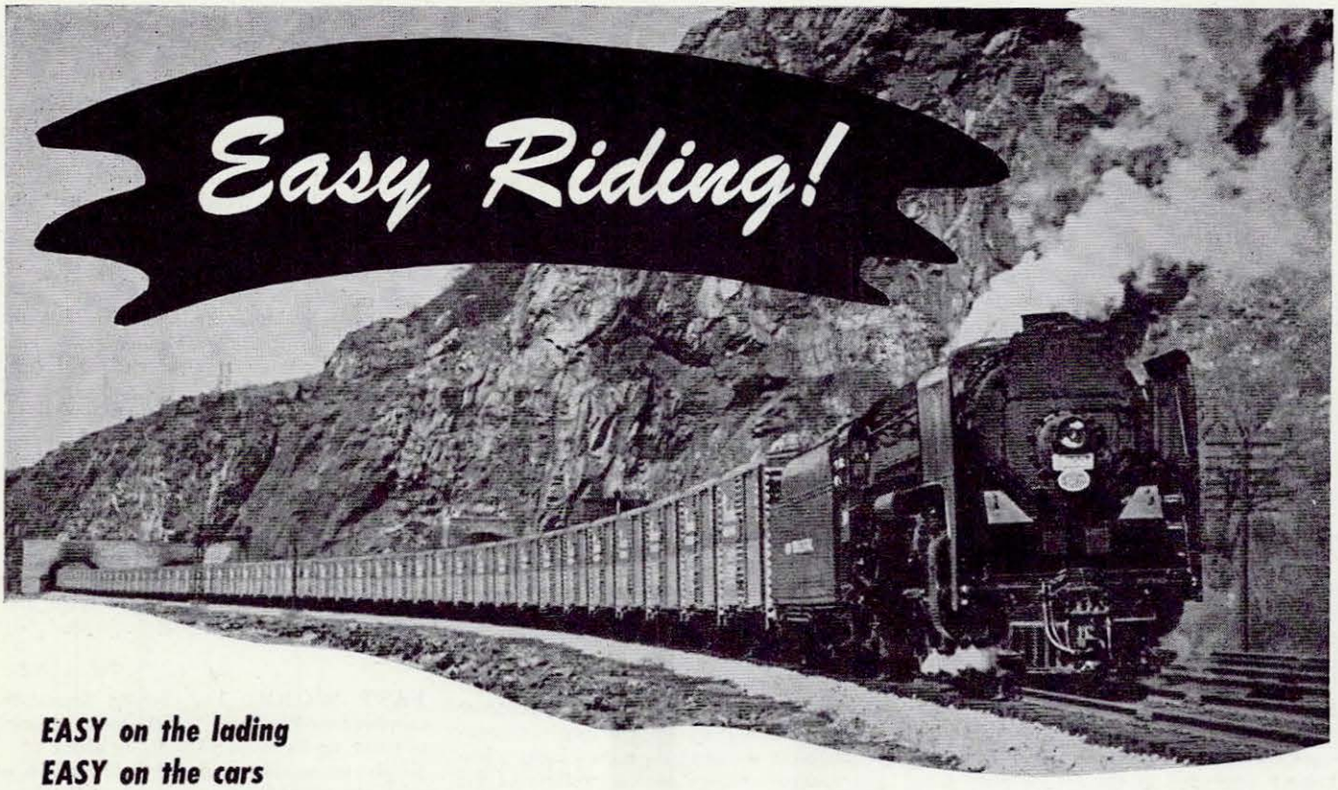

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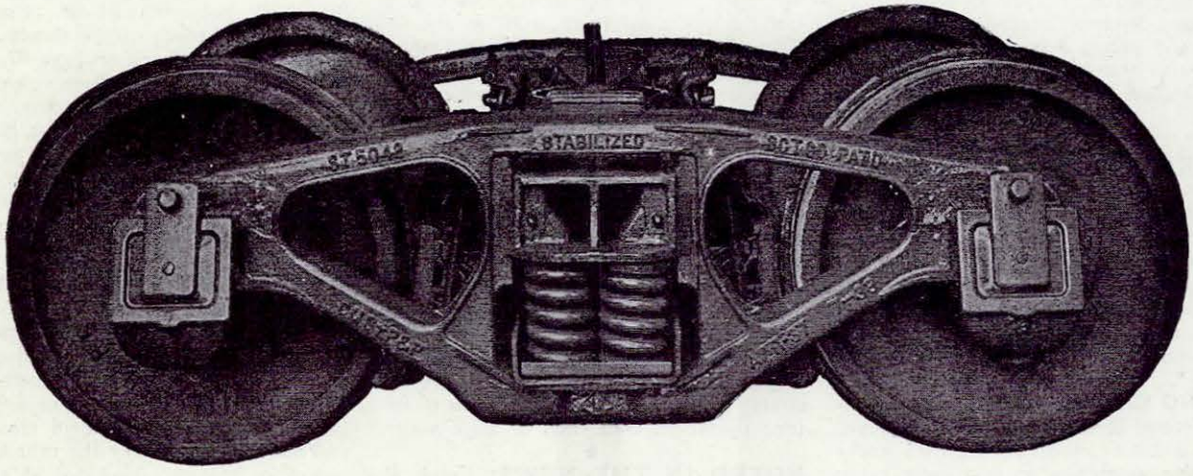

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RAILWAY AGE

Too Busy to Think

The inability of the leaders of the "big three" nations to reestablish international peace has been ascribed to the fact that they are so harried with domestic problems that they rarely have an hour to spare to do any long-range thinking about international relations. "Visions of the future are born from an intense leisure"—we are reminded by the authoritative Washington news letter, "Human Events," in a quotation from a contemporary French social philosopher.

Whether this observation be true about political leaders or not, there can be no question that it is applicable to industrial managements, including those of the railroads. It is not often realized, even by some top executives themselves, how totally dissimilar the function of these executives is to that of the heads of subordinate departments of their businesses. The duty of departmental heads is primarily that of *analysis*—meeting specific problems by breaking them down into their component parts, which can be dealt with one by one. The primary duty of the top executive, on the contrary, is, first and foremost, that of *synthesis*—combining the activities of widely different departments so they come together in the production of net income. And not only net income this year, but also ten or twenty years from now.

Daily Details Impede Thought

Most industries have gone a long way with *analysis*—although perhaps not in all cases far enough, since rule-of-thumb and traditional procedures are still far from extinct. If, however, the active departments do not have the time or the facilities to do the analyzing that needs doing, then it is usually true that analysts will be hired—engineers or statisticians—to devote all their time to such work. No such conscious attention is given by most industries to the equally important function of *synthesis*. Top management has so much unavoidable day-to-day detail to attend to that it has little opportunity to meditate at adequate length upon the fact, for instance, that a dozen departments, each operating successfully according to its own lights, do not automatically produce a business which is prosperous as a whole; or upon the fact that what seem to be clever departmental practices today may be building up a mountain of trouble for a later period.

The operations of mind necessary to successful management of a large enterprise include imagination (or intuition), analysis, and synthesis. All of these are needed at every stage of the career of a business—but different stages call for special emphasis on one of these operations more than on the others. For example, imagination (or intuition) must, obviously, be the dominant guiding force at the inception of a successful large business. Once the enterprise gets going, analysis comes to the forefront to improve its product and reduce costs. Thereafter, synthesis needs attention, in order to keep the business adjusted to its environment and to forestall the tendency of separate departments to pursue mutually incompatible goals, with small regard for the welfare of the enterprise as a whole.

Corporations As Social Organisms

Most of the serious troubles into which business has fallen in the past fifteen years have arisen from the failure of management to devote sufficient attention to synthesis and to develop the skill at it that has been attained in analysis. Specifically, difficulties with labor have unquestionably arisen from management's concentrating so intently on cost reduction, as it did for so many years, with little attention to the fact that *when costs are reduced at the expense of employee or public goodwill, the price paid for such "savings" is usually too high.* More thought by management in the direction of synthesis, rather than exclusive interest in analysis, would have avoided this difficulty—and offers the only hope of correcting it.

It is one thing, however, to say that synthesis is desirable and quite another to attain it, especially with the heavy burden of immediate problems which no management can put aside. Nevertheless, the effort must be made, and experiments by individual concerns in this direction merit observation, with the view to wider adoption for those which are successful. A particularly interesting innovation in this direction by the General Motors Corporation has been recorded in a recent book.* The corporation engaged the services of a social scientist to survey its operations as a social organism and this book is his report. As a purely economic instrument the large mass-production factory (or railroad, for that matter) has been so successful that it has become indis-

* "Concept of the Corporation", by Peter F. Drucker. Published by John Day, N. Y. Price $3.

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Equipment Failures and Train Delays

As aptly expressed in a committee report of the American Association of Railroad Superintendents, dated April, 1946, "Railroad operation breathes through the clock." Time is an integral part of railroad functioning and so much attention was given to this factor in the past that a tradition of on-time performance developed and some people even checked their watches and clocks by the passing of certain trains.

This tradition is less firmly held today than formerly, or in other words prior to World War I. In the 1920's, faster schedules, longer and heavier trains, more complicated motive power and many more mechanical and electrical operating parts of car equipment increased the possibility of failures. During the next decade from 1930 to 1940, the railroads, like most other industries and individuals, were under heavy pressure to economize and there is no question that inspection and maintenance work were reduced to a minimum at some sacrifice in on-time performance.

With increased earnings during World War II, a higher degree of inspection and maintenance was feasible, financially, but shortages of both materials and labor introduced difficulties. Old and retired equipment, pressed into service in response to urgent demands, was of course less reliable than more modern types. All records for traffic handled in both freight and passenger service were broken, but often at the expense of disrupted schedules and late trains, which the public accepted more or less cheerfully under war conditions but will hardly tolerate now that the emergency is over.

In the field of reliable, on-time transportation service, railroads have one of the finest opportunities to impress the public favorably and exceed their competitors on both the highways and airways, the latter in particular being subject to delays on account of weather, cancelled flights and sometimes the delivery of lading or passengers miles away from the expected destination. Redoubled efforts are therefore in order to restore and strengthen the earlier tradition of trains operating on schedule, even in spite of highly adverse conditions.

Space is not available here even to mention all the causes of train delays. Needless to say, the records should be accurately kept and analyzed on individual roads with the greatest care, as is now generally being done. According to the superintendents' committee report referred to, equipment failures are the largest single contributing factor in train delays and, in one study of through main-line passenger-train service for a period of 12 months, were responsible for 23,012 minutes, or 27.4 per cent of the total delays. Locomotives and cars were almost equally chargeable with these delays.

When a modern streamliner or manifest freight train is observed passing a station or highway crossing at high speed and consideration is given to the tremendous energies involved, as well as the multiplicity of mechanical details which *might* get out of order and cause trouble, the great wonder is that so many of these trains operate day after day without schedule delays of any appreciable amount. This result is a definite tribute to the material suppliers, designers, builders, maintainers and operators of railway rolling stock.

One suggestion which may be emphasized as a means of increasing the number of miles per equipment failure, in case it is low, is the development of more uniform procedure in recording and analyzing train delays and defining just what constitutes a locomotive or car failure. In this way, various divisions on the same railroad can be encouraged to develop a healthy rivalry in reliable performance and individual railroads can also make valuable comparisons with each other if they use the same terminology and the same measuring units.

To effect maximum improvement, probably major credit should be awarded for the discovery and correction of primary causes of equipment failures rather than the juggling of figures to make a favorable showing on paper, as has sometimes been done in the past. In other words, if both steam and Diesel locomotive miles per failure have decreased substantially in the past three years, as has happened on more than one road, it is more helpful to accept the fact, publicize it (among railroad men responsible) and correct it than to alter definitions and figures in such a way as to make a favorable record on paper.

A Century of Cooperation

Despite criticism from some quarters that the American railroads have failed to advance technologically as fast as other industries, there are those who both believe and demonstrate to the contrary. These include the large group of railway supply companies that have studied and helped solve railroad problems for more than a century.

A factor in railroad technological progress not often noted by its critics is the close cooperation and mutual understanding existing between railway officers and equipment and supply manufacturers. An arrangement which may appear peculiar to some industries, but one that is common and remunerative practice on numerous railroads, is the habit railway officers have of consulting supply company representatives in working out their problems. A typical example of this close

cooperation is to be seen in the new method of overnight seasoning of crossties where both the cooperating railroad and the supply company spent large sums of money in developing, testing and expanding this revolutionary process. Other cases in which mutual understanding has produced effective results include the improvement of rail and track fastenings and the development of more versatile material handling equipment and improved paints and protective coatings. One of the latest developments achieved through railroad-manufacturer cooperation is the automatic ticket vending machine. This device has emerged from the blueprint stage into a reality and, from all indications, will greatly simplify ticket selling and auditing.

With railway purchases aggregating more than $1¾ billion during 1945, and with the large backlog of equipment and supply orders now on hand, it is desirable that cooperation of suppliers and users continue, and be expanded to include all branches of the supply field. There is every indication that such extension and deepening of cooperation will occur, and that railroad service and efficiency will be fostered thereby to the public advantage.

Only One Way to a Genuine Wage Increase

The inherent tendency of capitalist evolution is to raise real wages steadily. This outcome is the effect of the progressive accumulation of capital by means of which technological methods of production are improved. Whenever the accumulation of additional capital stops, this tendency comes to a standstill. If capital consumption is substituted for an increase of capital available, real wages must drop temporarily until the checks to a further increase in capital are removed.

The malinvestment — i. e., the squandering of capital that is the most characteristic feature of credit expansion and the orgy of the fictitious boom it produces—the confiscation of profits and fortunes, wars and revolutions, are such checks. It is a sad fact that they temporarily lower the masses' standard of living. But these sad facts cannot be brushed away by wishful thinking. There are no other means to remove them than those recommended by the orthodox economists: a sound money policy, thrift in public expenditures, international cooperation for safeguarding durable peace, economic freedom. . . .

The essence of [union wage] policies is to prevent the unemployed from finding jobs by underbidding union rates. This policy splits the whole potential labor force into two classes: the employed who earn wages higher than they would have earned on an unhampered labor market, and the unemployed who do not earn anything at all. . . . The traditional union policies do not serve the interests of all, but only those of a group. While in individual bargaining the unemployed virtually have a voice, they are excluded in collective bargaining. . . . Union rates are fixed at a level at which a considerable part of available manpower remains unemployed. Mass unemployment is not a proof of the failure of capitalism, but the proof of the failure of traditional union methods.

The same considerations apply to the determination of wage rates by government agencies or by arbitration. If the decision of the government or the arbitrator fixes wage rates at the market level, it is superfluous. If it fixes wages at a higher level, it produces mass unemployment.

—Dr. Ludwig von Mises in an address to the American Academy of Political and Social Science.

Can Maintenance Costs Be Held within Reason?

Faced simultaneously with greatly increased labor costs and a demand for higher track standards to meet higher speeds, there is only one "out" for maintenance of way departments, viz., roadway machines and improved construction to reduce the man-hour content of necessary work. The means thus adopted to meet the problem of labor costs will at the same time help the railroads to solve the problem of competition—by providing greater service life at a lower cost for maintenance and replacement. Experience with roadway machines, in which the railroads already have an investment of well over $135,000,000, will bear out the conclusion that this equipment will actually produce the economies which have now become so imperative. And the same can be said for the use of improved materials—no better example of which could be cited than the almost universal use of the treated crosstie, with its more than quadrupled life over the untreated tie, and correspondingly reduced installation cost per year of service.

Commenting recently on this general question, a maintenance officer lamented the fact that there are still major items of track maintenance that have not lent themselves to effective mechanization, citing particularly tie renewals, which annually require in excess of 40,000,000 man-hours of labor. He was also far from satisfied with present means for cleaning ballast, particularly from the standpoint of volume production and low unit costs. "Will it be admitted," he asked, "that we are completely stymied insofar as finding more efficient and economical tools are concerned?"

With equal concern, expressed over a much longer period, the chief engineer of an unusually progressive road has been advocating not only the maximum effective use of power tools and machines to reduce the cost of roadway maintenance, but has placed more than ordinary emphasis on the economy, and desirability from every other standpoint, of stouter, more permanent track construction, including a deeper than ordinary ballast section, larger crossties, and heavier rail. One of the major problems today, he insists, is to keep down mounting labor costs by building permanence into the track structure, and he has carefully accumulated figures which prove beyond question, at least insofar as his road is concerned, that emphasis on materials is paying off handsomely in lower maintenance costs.

This whole question must be faced squarely by engineering and maintenance officers, and is basic enough to warrant the attention of railway managements. The machines still needed to reduce roadway maintenance costs have long resisted the intensive thinking of many railway men and railway supply manufacturers, and will not be produced as a "side-line" project. Furthermore, their development cost will not be insignificant. The same can be said of effective and economical means for further strengthening and refining the track structure. It will require diligent study and research. The solution of both of these problems needs and deserves bold thinking and action by railway officers, because, while the ends sought have been desirable in the past, their achievement has now become a plain necessity.

Big Logs, High Bridge and Deep Canyon Pose Repair Problem

Replacement of heavy unsawn timbers in Cowlitz River trestle demands a large amount of ingenuity from maintenance forces because of unusual conditions for which structure was designed

ALTHOUGH the Pacific coast, particularly that portion which includes the states of Washington and Oregon, is noted for its big trees and for the spectacular uses to which some of the big logs and big timbers cut from them have been put, none of these uses has aroused more interest than the large timber trestles into which they have been built. Two of these trestles, reputed to be the largest ever built for railway loading, are found in the state of Washington, both being on the Cowlitz, Chehalis & Cascade, a small but important logging and lumber road 32 miles long.

These two trestles are about three miles apart, at Mill creek and the Cowlitz river, respectively—streams that arise in glaciers on the slopes of Mt. Rainier, and which have cut deep narrow canyons. Mill Creek trestle is of the usual trestle design, possessing no special features except its size. On the other hand, the trestle over the Cowlitz river is unique in its design and in the manner in which large unsawn logs from the adjacent forest have been used in its construction. Of no less interest than the spectacular design of the Cowlitz River trestle, however, were the methods it was necessary to employ in the replacement of the big logs when they had to be renewed.

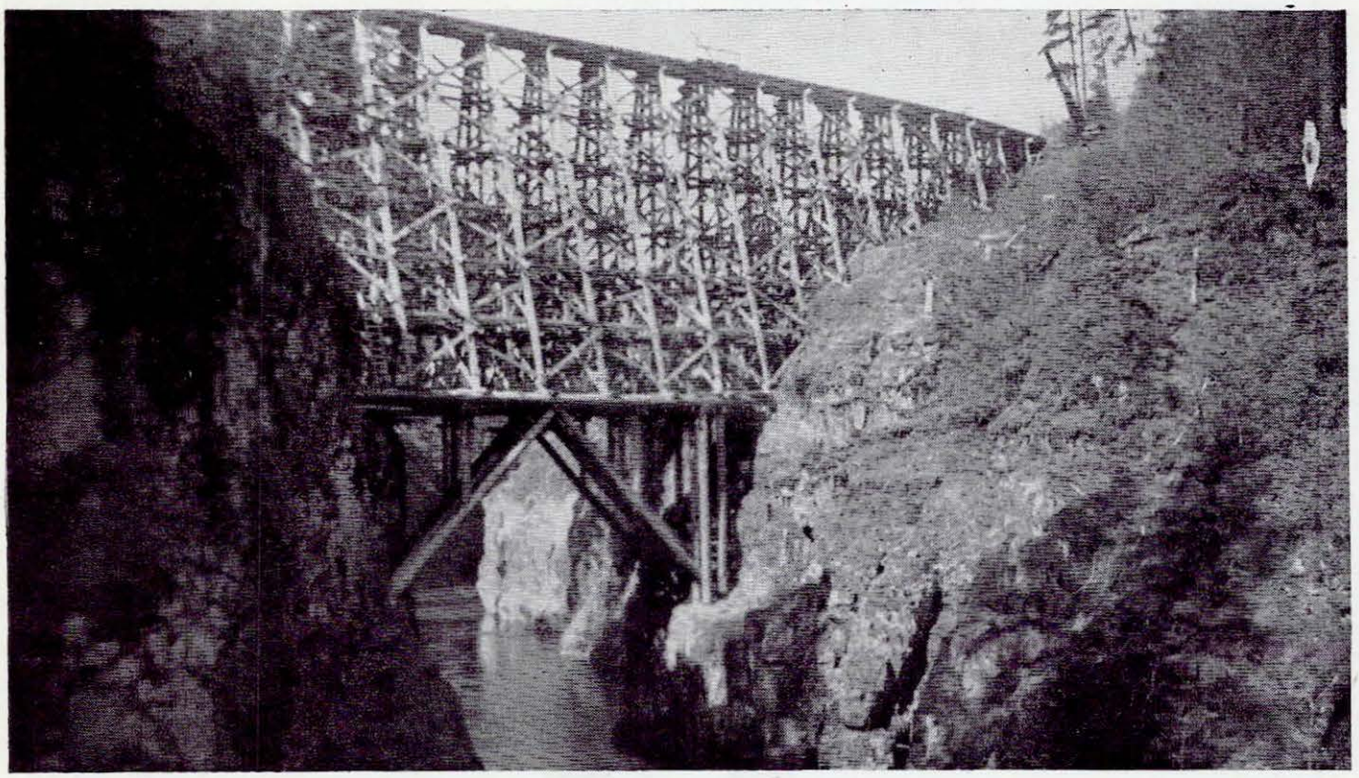
At its best, the Cowlitz river is a brawling mountain stream; at its worst, during flood stages, it may rise in the canyon as much as 80 to 90 ft. above normal water level, to become a raging torrent that sweeps everything before it. For this reason that portion of the trestle which spans the chasm had to be built so that no part of it would extend below flood level.

Because of the rugged terrain through which the road is built, the tracks cross the river 210 ft. above the stream bed and 180 ft. above normal water level. At the point of crossing, about 80 ft. of glacial drift and volcanic debris overlie the rock strata which comprise the lower part of the canyon walls. At the track level this drift has been eroded to a width of more than 400 ft., but this is reduced to less than 125 ft. at the surface of the rock strata. For the next 100 ft. to the water in the river, the width narrows to about 100 ft. It can be seen, therefore, that for 100 ft. of its depth the canyon is narrow and the walls are almost vertical.

The trestle is 420 ft. long and consists of 29 bents spaced at intervals of 15 ft., eight of the bents being 80 ft. high and directly over the gorge. Obviously, some method of support had to be devised to keep them above flood level. This was accomplished by installing A-frames across the narrow part of the canyon to support horizontal timbers which, in turn, carry the eight bents above the chasm.

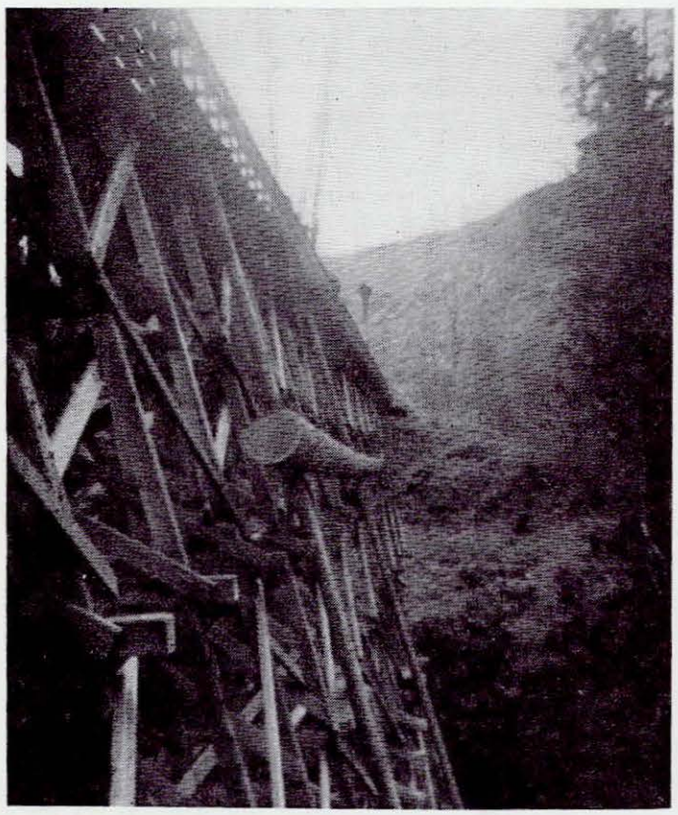
Aside from the use of the A-frames, which is unique for a bridge carrying

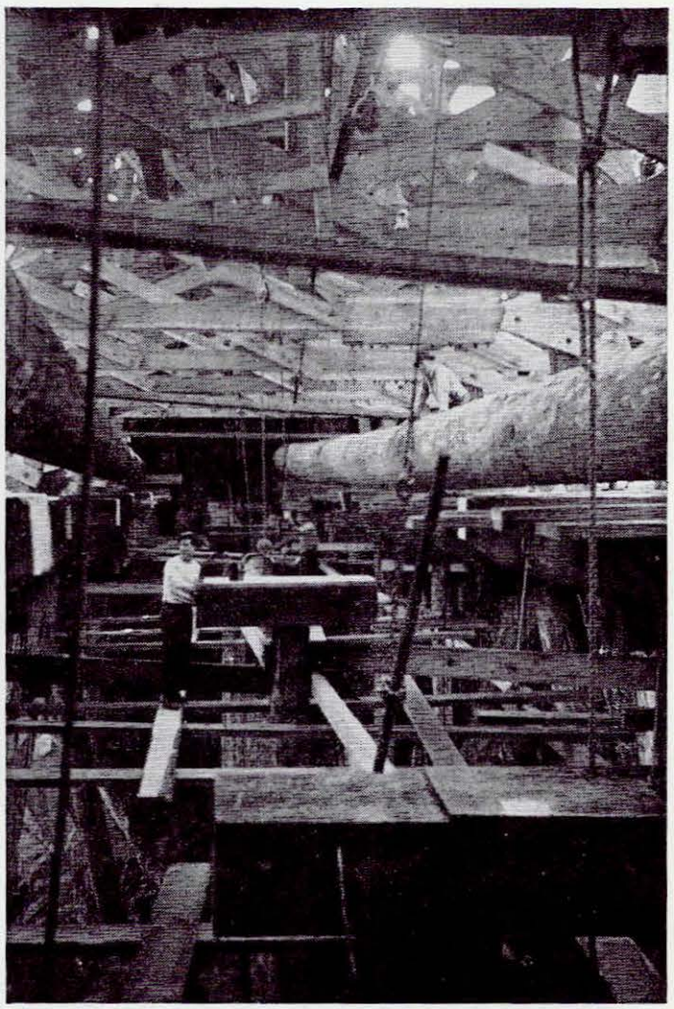
Only by seeing the Cowlitz River trestle, with its high deck level and broad expanse, can its size be appreciated



railway loading, and the total height, this structure is also distinguished by the fact that both the horizontal timbers that support the bents above the chasm and all of the A-frame posts are measure 4 ft. in diameter at the butt and 3½ ft. at the tip.

The Cowlitz, Chehalis & Cascade originally extended southeasterly from Chehalis, 18 miles into a heavy and, in connection with the extension to Mayfield, none of the timbers entering into their construction was given preservative treatment. Furthermore, during the first 15 years following their





Above—One of the big logs being lowered down the side of the trestle. Note the two skid logs along the face of the structure

Right—This view shows the caps cut at an intermediate A-frame and two big logs ready to be lowered into their seats

unsawn Douglas fir logs, installed just as they were cut in the adjacent forest, except that they have been peeled. There are five of the A-frames, each of which supports two horizontal logs that act as beams upon which are laid the sills of the 80-ft. bents above the chasm. The A-frames which straddle the gorge are composed of two posts each, the lower ends of which rest on prepared footings on the sides of the canyon walls.

The A-frame posts average about 58 ft. in length for the easterly legs and 49 ft. for the westerly legs. Each leg of each A-frame supports one vertical (sawn) post, while a second sawn post rests on rock just beyond the footings of the A-frames, these sawn posts being inserted as additional supports for the horizontal logs. The logs range from 112 to 125 ft. in length, and are laid in pairs, tip to butt, so that the beam strength remains constant throughout their length. As an indication of the magnitude of the structure, these logs until then, untouched stand of Douglas fir. In 1927 the road was extended 14 miles to Mayfield and it is on this extension that the two high trestles are located. At that time it was estimated that there were 50,000,000,000 ft. b.m. of standing timber tributary to the road.

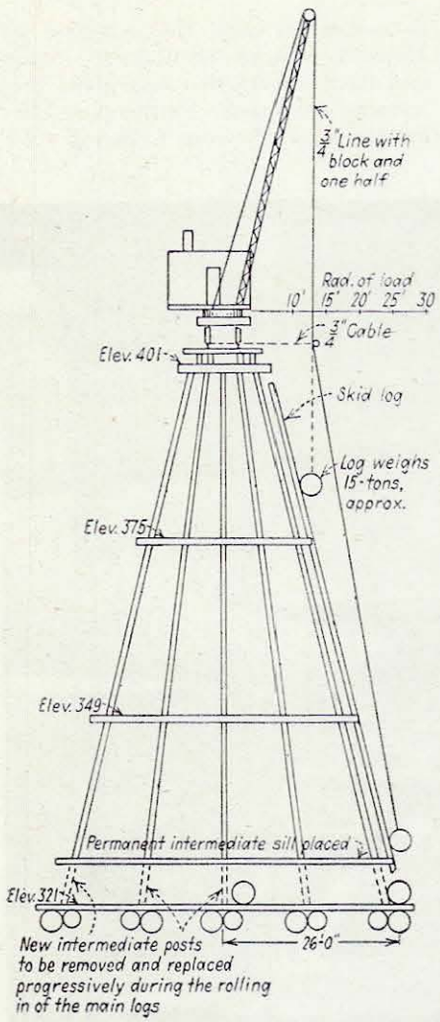
A Lumber Road

Primarily the road was constructed, and later extended, to handle forest products. These included logs transported to the sawmills established along the line; and the lumber and timbers produced by these mills are moved to Chehalis and there delivered to the Chicago, Milwaukee, St. Paul & Pacific, the Great Northern, the Northern Pacific and the Union Pacific. These four roads participated jointly in the original construction and in the later extension, and now own the road jointly.

When the trestles were built in 1927, construction, practically no maintenance effort was expended on them except for the renewal in the Cowlitz structure of two caps, the replacement of one A-frame and of a post supported by another A-frame.

However, in 1941, indications that certain of the timbers in the Cowlitz River bridge needed replacement led to the formation of a committee of engineers representing the four owner roads. This committee conducted an extensive examination of the structures and presented a report that recommended that certain replacements be made.

As first outlined by the committee, the work on the Cowlitz River trestle consisted primarily of the replacement of the 10 horizontal logs which support the trestle across the chasm, and the renewal of about 1,700 ft. b.m. of other trestle timbers. However, as the renewals progressed, much more work was discovered to be necessary.


3/4" Line with block and one half
Rad. of load
10' 15' 20' 25' 30
3/4" Cable
Elev. 401
Skid log
Log weighs 15 tons, approx.
Elev. 375
Elev. 349
Permanent intermediate sill placed
Elev. 321
26'-0"
New intermediate posts to be removed and replaced progressively during the rolling in of the main logs

Sketch showing how the big logs were lowered and rolled to position for installation. Note the load line tied in to constant radius

Replacement of the big logs in kind was recommended by the committee. This decision was influenced by an experience during a sudden rise of water in the gorge in 1939, when one of the A-frames was carried out. When this occurred, the unspliced main logs were able to support the dead weight of the trestle until the A-frame could be replaced. During its discussions the committee considered the use of built-up, spliced timber chords, instead of the main logs, but it was believed that they would not be strong enough to withstand flood damage to the same extent as the logs did.

In making this decision, the committee was faced immediately with the further question of how to do the work. To appreciate its magnitude, one must visualize five pairs of logs, each one 4 ft. in diameter at the butt and 3½ ft. at the tip, averaging around 125 ft. in length and weighing 15 tons each. These logs had to be lowered from the deck of the trestle and placed under the sills of the eight 80-ft. bents directly above the gorge. At the same time the ends of the logs were to be placed on seats that had been cut into the rock on the sides of the canyon. As if this was not enough of a problem, they were also to be given intermediate support at the apices of the A-frames and on the four intermediate posts that have been mentioned. Added to these difficulties, all of this had to be done 100 ft. above the water, without interfering with traffic.

How the Logs Were Placed

In accordance with the plan adopted, the first operation was to cut off the bottoms of the main posts of the eight, three-story, 80-ft. bents at a height of 7 ft. above the existing sills, and to place a new permanent sill in each bent at the height of the cut-off, and to insert short posts between the old and new sills. Two independent sets of sway bracing were then applied for each of the eight bents; that above the new sill being fastened in place rigidly by means of three boat spikes at each intersection, while that below was bolted to permit easy removal when the big logs were to be placed.

While these changes were being made, the logs were being selected and prepared for use. They were purchased from the Carlyle Logging Company, one of the logging outfits operating in the woods adjoining the line, for $100 each, not including the cost of peeling and framing. As the trees were cut, the logs were loaded and hauled to a framing yard which had been established a short distance from the bridge on the south side of the river.

Previous to starting the work, levels and measurements had been taken to prepare a framing plan for each log. In the framing yard the logs were peeled, but only the undersides of the logs were framed, together with the shaping of the ends to fit the original seats in the canyon walls. The framing for the sills the logs were to carry was deferred until they were in place.

Not the least of the problems involved in the replacement of the big logs was that of getting them into final position in the structure. The plan evolved for doing this was, first, to hang log skids, each about 75 ft. long, from the caps of two bents on the downstream side of the trestle. These skids terminated far enough above the main sills, which rested on the big logs that were to be replaced, to allow the new logs to clear them as they were rolled into place. This gave a smooth surface for the lowering of the logs and avoided any damage to the batter posts, the intermediate sills or the bracing. The logs were then loaded one at a time on a flat car and moved out onto the bridge, with a locomotive crane at each end of the log.

When the log had been moved to the point from which it was to be lowered, the wheels of the cranes were blocked, the outriggers were set up and the rail clamps were applied to the rails. The tackle used for the lowering operation consisted of a ¾-in. steel cable reeved in a block and a half for each crane. Then, when ready for lowering, the log was picked up from the flat car and swung carefully out over the side of the trestle.

As soon as the booms had been swung to a radius of 12½ to 13 ft. the load lines were tied in, as shown on the drawing, so that the pull on the booms was established at this radius. The log was then lowered slowly down the skids, care being exercised to keep it level, to a position at the ends of the sills, 80 ft. below the caps.

At no time during this or later phases of the work was any effort made to rush it; on the contrary, every move was made deliberately after assurance that everything was ready, to reduce the possibility of personal injuries or other accidents. A careful check was kept of the time required for the several operations, and this record showed that it required 1 hr. 15 min. to move one of the logs from the framing yard to its final position on the sills.

As soon as the log had been lowered to the elevation of the top of the main sills, the first line of short posts on the downstream side of the trestle was removed, the bolted braces were lifted and the log was rolled in. The posts were then restored, and the operation was repeated progressively for the remaining posts until the log had reached a point on the sills near to its permanent position. As rapidly as the log was moved laterally far enough to permit, the movable braces were also restored. This movement of the log, including the removal and replacement of the posts and braces, also required 1 hr. 15 min., making a total elapsed time of 2 hr. 30 min. for moving each log from the framing yard to a position from which it was ready to be installed.

Getting Logs Under the Sills

As soon as the first two logs had been rolled in and were ready for insertion under the upstream batter posts, the A-frame for supporting them was tied securely in place so that it could not shift. Then a section of the main sill of each of the eight bents directly over the first two logs to be replaced was cut and removed. Following this, the old logs were cut into short lengths and lowered to the river. Then the old brace blocks, the vertical posts supporting the big logs and the caps at each support were removed. However, when the corbels and post caps were removed from the A-frames, it was

found that the heads of the diagonal logs comprising the A-frames were decayed quite badly.

In the original construction none of the timbers were given preservative treatment or other protection to retard decay. Obviously, if the A-frame timbers in this condition were allowed to remain it would be a relatively short time before they would constitute a danger to the stability of the structure. For this reason, it was decided to replace them while the bridge was open and the work could be done under the most favorable conditions.

As a result of this decision, four of the five A-frames were replaced with new timbers, the fifth, the second one from the downstream side of the trestle, having been the one that was washed out and replaced in 1939. As might be expected, the renewal of the A-frame posts was the most difficult, the most time-consuming and the most expensive part of the entire program of replacements. With the replacement of the A-frames, the caps and posts at each point of support were replaced and the big logs were lowered to the new caps and bolted into place. The short posts in the tall bents were then replaced but, since the main sill had been cut out, they were supported temporarily on blocking set on the big logs, until all of the big logs had been renewed and new sills could be installed.

By the time this work was finished, new timbers had been framed to replace the eight sills that had been cut out piecemeal to allow the big logs to be lowered onto the A-frames; these were brought in singly and slid into position for insertion. In preparation for this the short posts of the first bent had been removed and the sills which they carried were supported on blocking and needle beams resting on the big logs. The main sill for the bent was then shifted to final position after the big logs had been dapped to receive it. Following this, the posts and removable braces were replaced. This entire operation was carried out for each bent individually until all eight sills had been renewed.

Big Logs Were Decayed

Among the many matters of interest in connection with this unusual use of timber, from the standpoints both of the size of the structure and the character of the timbers employed, is that of decay. As has been stated, none of the timber employed, either sawn or unsawn, was given preservative treatment or other form of protection against decay or insect attack. At the time of the original inspection by the committee the structure had been in service for 15 years, sufficiently long to permit decay and insect attack to get under way. There was no evidence at this time or later, of insect attack sufficient to cause concern. The condition of the big logs has been mentioned in part, and the conditions with respect to decay in the A-frames when they were uncovered was entirely in line with what had been found in the big horizontal logs and in the members incidental to their support; although they were not so apparent at the time the inspection was made. When the undersides of the big logs and of the A-frame posts were examined during and after their removal, decay was as evident as on the upper side; in fact, in some cases it had progressed further. Hidden decay was particularly extensive where the logs had been held apart by block spacers. Sawn timbers that exposed only heartwood were not so badly affected, and few required renewal.

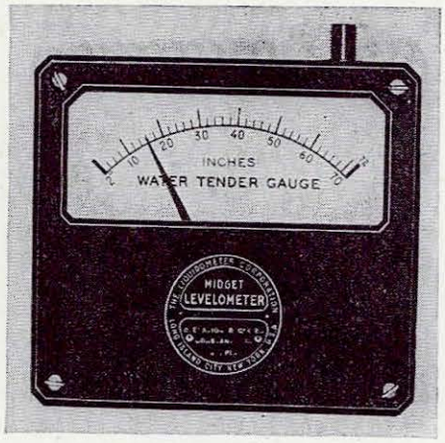
Mention has been made of the special efforts that were made to avoid personal injuries and other accidents. Because of the care that was exercised, the work of replacing these exceedingly large timbers under the exceptional conditions that surrounded the structure went along smoothly and uneventfully, almost as a matter of routine, until after the ninth log had been rolled and lashed into position for replacement. Then, as Log 10 was being rolled in it got slightly out of control and struck sharply against Log 9, knocking it off its seat and causing it to fall through the bracing to the rocks below, where it broke into several pieces. Fortunately, this was the only accident on the entire work, and it was equally fortunate that it caused no personal injury, the only effect being some delay while a new log was cut, peeled and framed.

Owing to the war-induced shortage of labor, which was particularly severe on the Pacific coast at the time the work was done, neither the C. C. & C. itself, nor any of the owner roads was able to make these replacements with its own forces. The work was, therefore, let to the Hart Construction Company, Tacoma, Wash. This contract also covered the Mill Creek trestle, which involved the replacement of 71,450 ft. b. m. of sawn timber, but except for the size of the structure, the work at this point presented no particular difficulties.

* * *

Liquid Level Gage

To enable railroads to comply with I. C. C. regulations requiring the installation of water-level gages on all tenders by June 1, 1948, a midget Levelometer has been developed by the Liquidometer Corp., Long Island City, N. Y. The gage is designed to withstand vibration and shock, and to be dustproof. When attached to a constant source of air pressure an automatic indication is obtained. The dial-type bellows-actuated indicator, calibrated in feet and inches or in gallons, responds to slight changes in the amount of liquid being measured. For installation a length of ½-in. pipe within the tender tank is all that is required.



The Midget Levelometer dial-type hydrostatic tender-tank gauge

Refrigeration Unit

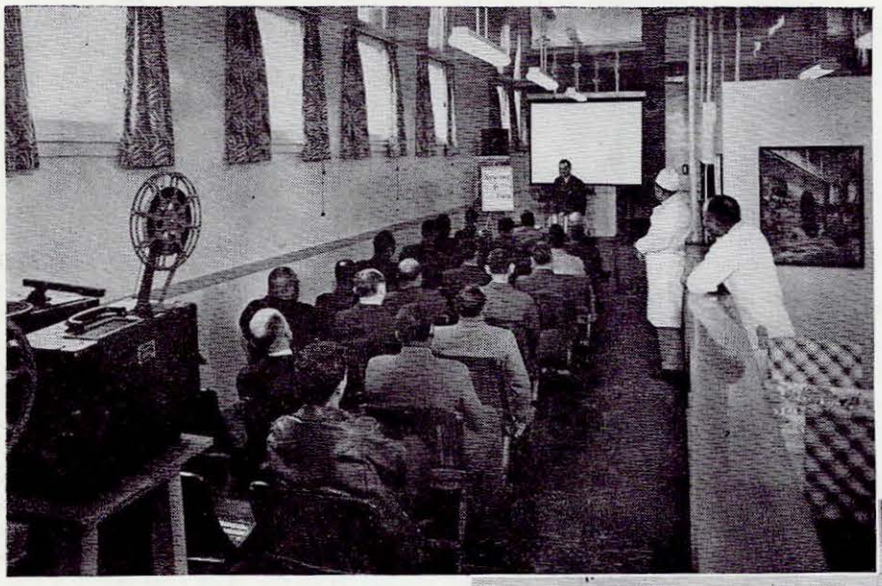
A refrigeration unit with a direct-driven compressor and an evaporative-type condenser has been developed by the Safety Car Heating & Lighting Company, New Haven 4, Conn. The compressor unit has four cylinders arranged in V form and operates at sufficient speed for direct connection to the driving motor.

The evaporative condenser saves weight, takes less space, and lessens power requirements for the fan. Cooling is produced by a combination of a water spray and air circulation. The air supply is obtained from an axial-flow fan mounted on the driving motor shaft. The water for cooling comes from the water supply of the car and from the condensate which forms on the cooling coil. In operation, make-up water from the car system may not be required. The cooling water is sprayed on the condenser by the fan, which takes water from the sump and projects it on the coils. The water that is not evaporated returns to the sump for recirculation.

Control of this device is by two thermostats. The compressor operates at full

(*Continued on page 92*)

Illinois Central Starts School for Dining-Car Employees



Above—A combined lecture, visual-education, discussion period is used to open each instruction class, followed by demonstrations of cooking and table-service techniques. Right—A cooking demonstration by the supervising chef—Note unobstructed view of the entire operation made possible by cut-away side wall

As a means of improving its dining-car services, the Illinois Central has inaugurated a school for the comprehensive training of dining-car employees. A novel feature is a classroom containing a kitchen, arranged as in a dining car, and a dining room that is a replica of a dining-car interior.

Each dining-service employee attends a 3-hr. class every six weeks, during which he receives instructions in the form of lectures, motion and sound-slide pictures, demonstrations and open forum discussions. For those whose runs do not bring them to Chicago, where the permanent school is located, a dining car has been equipped for training purposes and is sent with the instructors to Fulton, Ky., Jackson, Miss., and New Orleans, La. Each dining-service employee is thus reached about once every six weeks, and the road hopes to attain a uniformly high quality dining service.

The Chicago classroom, where the bulk of the employees are trained, is on the fourth floor of the commissary building, adjacent to the passenger terminal. Slightly over one-half of the room is devoted to classroom purposes; it is equipped with a sound motion-picture projector and screen, as well as the usual chairs for the audience and desk for the instructor. A small cold room stores foods used in the cooking demonstrations.

Along the west wall is a replica of an Illinois Central dining car, including kitchen, serving pantry, dining room and steward's office and lockers. The wall between the assembly section of the classroom and the dining car replica has been cut away at about elbow height so that the trainees can easily watch demonstrations without the congestion that would result if all tried to crowd into an actual dining car. The kitchen differs from an ordinary dining-car kitchen only in the use of electric burners in the range in place of a coal fire.

Attendance Is by Crews

Operation of the school is scheduled, so far as possible, for the convenience of the dining car crews. Attendance is required and is by crews rather than by individuals. In most instances classes can be held just before the crew goes on duty or just after it arrives at its terminal, thereby eliminating interference with the employees' layover days. Although this results in some inconvenience to the instructors because of irregular hours (some classes begin at 6 a. m., others at 6 p. m. or later), the management believes that the higher morale resulting from non-interference with rest days makes the effort worth while.

The training program includes instruction in virtually every phase of dining-car operation with special emphasis on sanitation, courtesy, safety, preparation of food and table service. A description of one of the classes follows.

The class opened with a brief talk by the instructor who explained that good dining service requires a "specially trained personnel." The necessity of a continued high level of passenger traffic for the maintenance of the present employment level in the dining-car department was particularly stressed, which thought was tied into the idea that "one-time passengers" did not create many employment opportunities, but that repeat travel produced permanent, long-time demands for dining service.

The instructor continued with a discussion of ways to sell Illinois Central service to the passenger and convert him from a "one-timer" to a regular rider. He pointed out that although the passenger solicitor can secure a patron for the first time, no amount of effort on the part of the traffic department can induce

a dissatisfied passenger to return, nor prevent him from telling others of his unfavorable reaction to the road's service. On the other hand, if the passenger is transported safely, quickly, comfortably and on time to his destination, which he expects every time he boards any train, and if, in addition, he is courteously treated and made to feel that his patronage is appreciated by the railway, there is created in him a desire to travel on that train a second time, which desire can easily be converted into a regular habit if he is accorded similar treatment again.

There followed a break in the lecture during which a sound motion-picture of activities at Tuskegee Institute was shown, portraying the work of that school in developing educational facilities for southern negroes. The lecture was then resumed with a discussion of how courtesy to patrons could be developed. It was pointed out that in order to get along well with passengers, the employees must first form the habit of treating each other with consideration and kindness.

Turning to factors directly concerning dining-car work, a sound slide film, prepared by the United States Public Health Service and dealing with sanitation in the preparation and handling of foods was shown at this point in the instruction period, followed by a lecture on sanitation. Both the film and the lecture were concerned first with a discussion of the rapid development of harmful bacteria under favorable conditions and the possible fatal results if unchecked, and second with the methods of preventing such growth. The necessity for personal cleanliness, of daily destroying surpluses of certain foods such as cream sauces, etc., proper dishwashing and good housekeeping were developed. To bring home the absolute necessity of proper sanitation, the fact that the employees themselves must eat the same food served to the public and are therefore subject to the same exposures to disease that go with unsanitary conditions was stressed.

Safety Stressed

Employee safety was also given considerable attention. On the I. C., each dining-service worker is given a book of safety rules of the dining-service department which instruct him in such matters as boarding trains, disposing of refuse in a safe manner, placing tea and coffee pots on tables and trays so that other workers or passengers cannot be scalded, use of knives and cleavers, handling of hot grease, etc. At each class some of these rules are highlighted by a large reproduction of the appropriate safety bulletins, accompanied by an open forum discussion.

The formal class was concluded by a sound motion picture featuring the negro band led by Cab Calloway, followed by a brief discussion of the factors that have made that band a success, and those that create a successful dining-car crew; viz., leadership by the band leader, who can be compared to the steward or waiter-in-charge, knowledge of his duties by each member of the band or crew, and teamwork, with each doing his share of the job, all of which add up to the desired result, perfection. Throughout the entire lecture period the "professional" aspects of food preparation and service were stressed frequently.

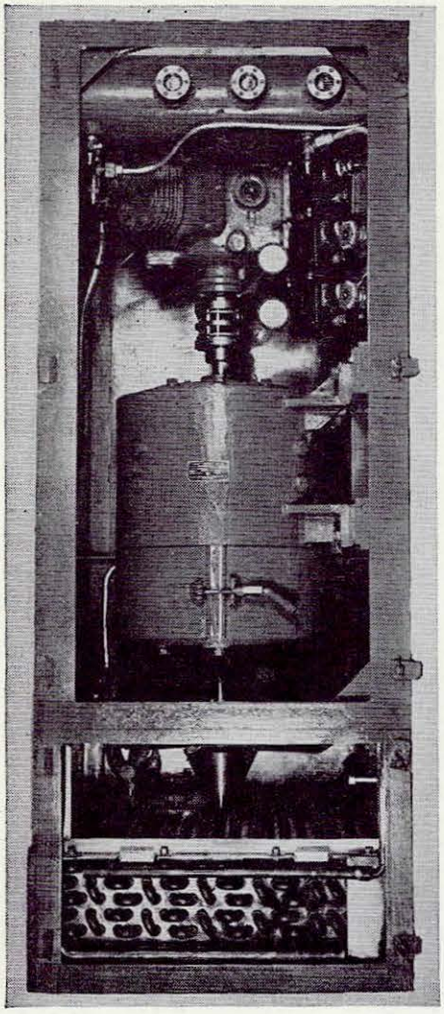
Upon completion of each lecture period, and after a short recess, demonstrations of kitchen and dining-room operations are given by a supervising chef and a supervising waiter, each an experienced and expert dining-service worker. The demonstrations of kitchen technique are exceptionally thorough and include the simplest as well as the more complicated procedures. For example, in one lesson the cooks and helpers were shown how to make gravy, how to bone a ham, and how to prepare ham and eggs. In addition the demonstration included instruction in the proper use of knives, cleaning of pots and pans, serving of plates, and general kitchen orderliness. All of these latter items are considered fundamental and are repeated at each demonstration although usually applied to the particular cooking lessons being demonstrated.

Simultaneously there is a demonstration of proper dining-room service, conducted for waiters. Here the special service is adapted to the train on which the trainees are assigned, but again emphasis is placed on such fundamentals as dishwashing, keeping the dining room clean, courtesy and safety, which are stressed in each lecture. As part of their regular routine, dining-car waiters are taught to watch all tables in the car and to refill water glasses and remove dirty dishes promptly, regardless of table assignment to individual waiters. Silverware, when removed from the table, is required to be washed at once, then immediately returned so that a complete silver service is always available to the passenger.

There was evidence of a lively interest on the part of the dining-car crews at the demonstration and many questions were asked and answered concerning points not scheduled to be covered at that particular time. In fact, the interest of the employees in this program has been such that many have voluntarily attended lectures given other crews in addition to attendance at the class conducted for their crew.

While it is difficult to determine the exact results of a program of this nature, there have been a few recent cases where traffic that would normally move otherwise has been attracted to the I. C. Outstanding is one in which a New York manufacturer, who makes frequent visits to New Orleans, regularly travels via Chicago so that he can utilize the "Panama Limited" between Chicago and the south.

A waiter instructor demonstrates fine points of table service to waiters of each crew, placing emphasis on details applicable to the run to which the crew is assigned



The compressor, motor, fan and evaporative condenser of the refrigeration unit

Refrigeration Unit

(*Continued from page 89*)

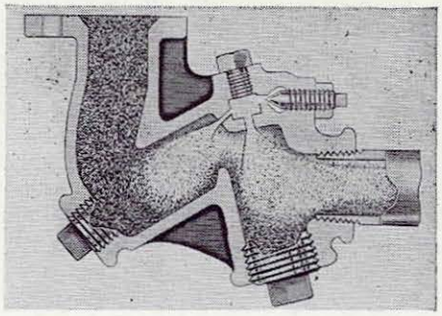
speed until the higher thermostat acts, at which time the control unit slows the compressor motor to half speed. Operation at half speed continues until the second thermostat is affected, when operation is stopped, to be resumed at half or full speed as conditions may require.

Sander for Diesel Locomotives

The King Sander No. 39 agitates and delivers the sand over the trap division by a horizontal jet of air, and diverts the sand from the trap walls and boosts it through the delivery pipe by air from a vertical jet. The air from the vertical jet also serves to aid in clearing the delivery pipe of any obstruction. Both jets operate simultaneously when the engineers' valve is opened in the cab. A regulating screw is installed for adjustment to suit the grade of sand, the amount required and the air pressure.

As the air orifices lie entirely above and away from the sand, there are no nozzles lying in the sand to become clogged or worn. The location of the orifices eliminates the necessity for blast caps, and there is no blast of sand against the walls.

This sander is a product of the United States Metallic Packing Co., 1234 Hamilton Street, Philadelphia 34, Pa.



The King Sander has a continuous stream of air blowing ahead of and behind the sand during operation

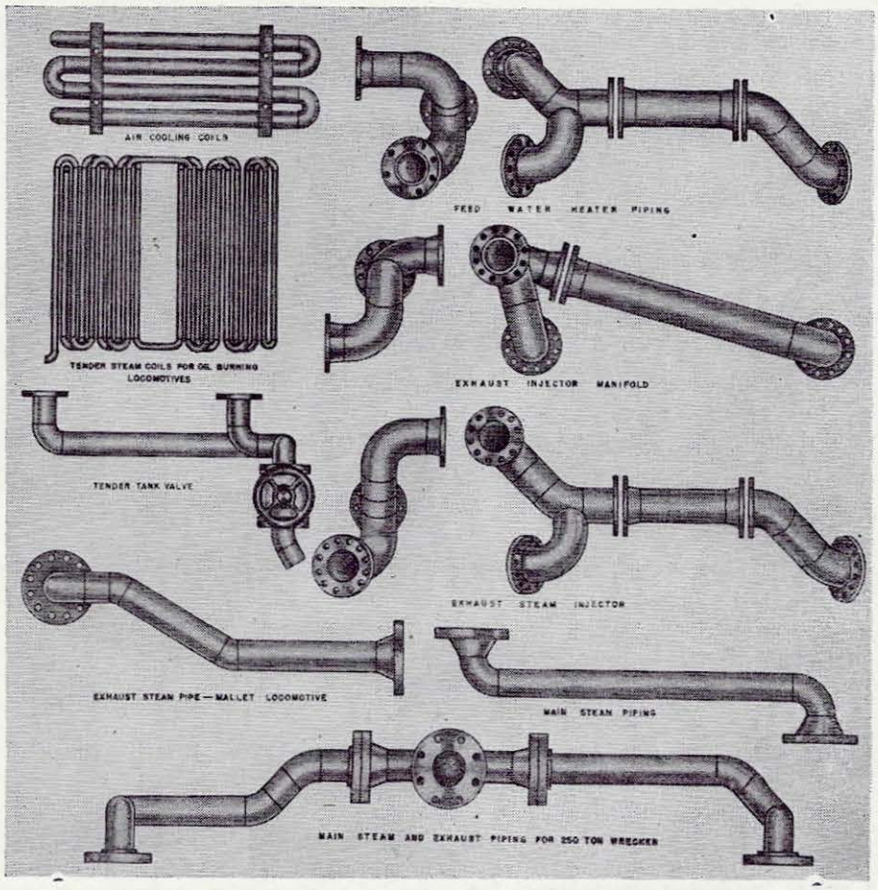
Welded Fittings

A line of welded fittings for Diesel- or steam-locomotive piping is available from Tube Turns, Inc., Louisville, Ky., in diameters ranging from ¾ in. to 30 in., and in light, standard, extra heavy, and double extra heavy weights. The fittings are forged from seamless steel pipe and tubing that meets A. S. T. M. and A. S. M. E. specifications.

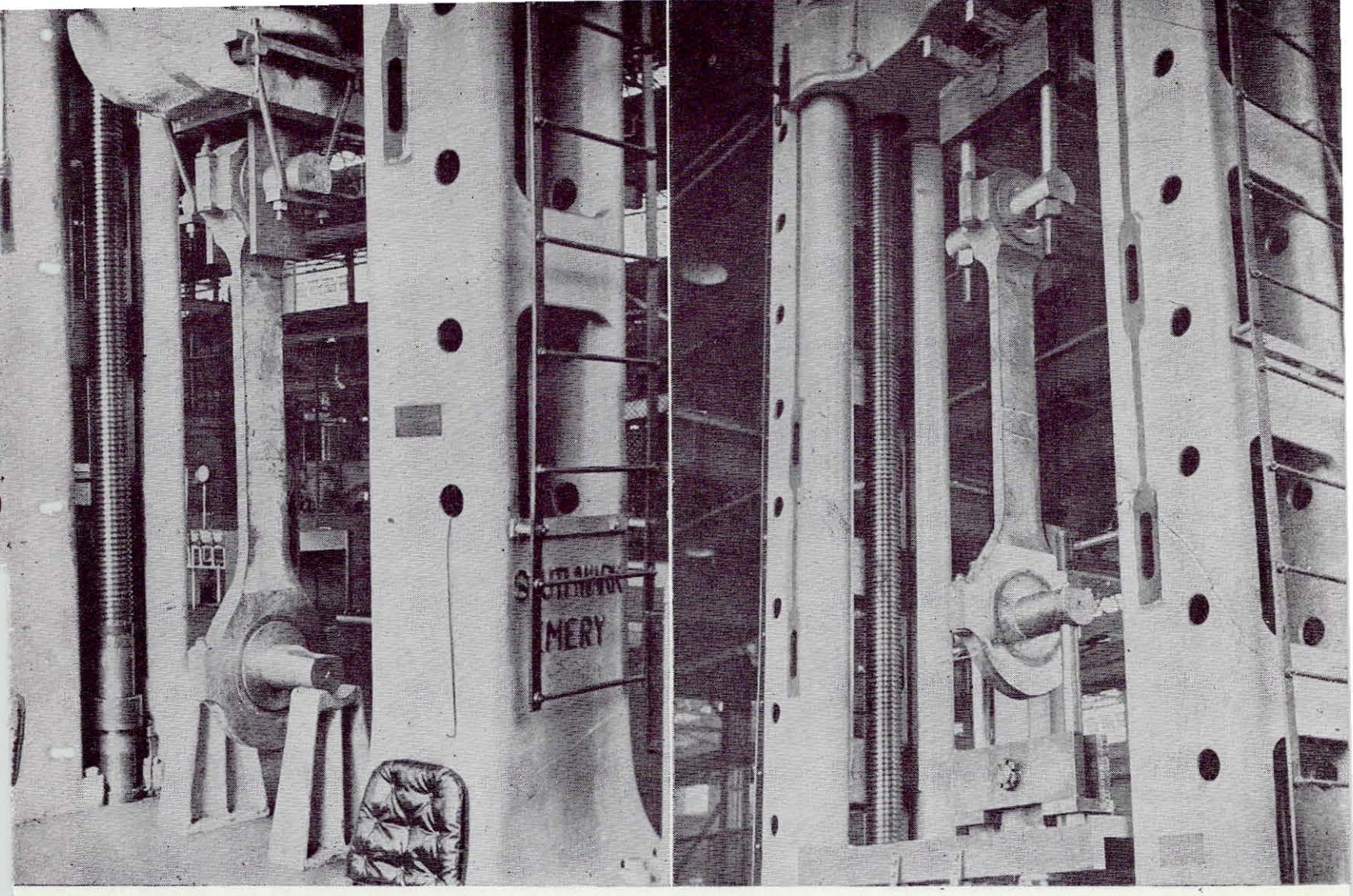
In a recent test a 6-in. standard-weight Tube-Turn 90-deg. elbow is said to have shown no distortion after being subject to a hydrostatic pressure of 4,200 lb. per sq. in. for 30 minutes, and 3,000 lb. per sq. in. for an additional half hour. Then, to simulate the abrasive effect of cinders in a smoke box, approximately 50 per cent of the wall thickness was shotblasted away. A pressure of 3,000 lb. per sq. in. was held for several hours with only slight distortion, and 3,800 lb. per sq. in. was required to rupture the fitting.

In addition to greater strength, Tube-Turn welded fittings are designed to give more efficient flow, improved appear-

(*Continued on page 98*)


AIR COOLING COILS
FEED WATER HEATER PIPING
TENDER STEAM COILS FOR OIL BURNING LOCOMOTIVES
EXHAUST INJECTOR MANIFOLD
TENDER TANK VALVE
EXHAUST STEAM INJECTOR
EXHAUST STEAM PIPE—MALLET LOCOMOTIVE
MAIN STEAM PIPING
MAIN STEAM AND EXHAUST PIPING FOR 250 TON WRECKER

Steam locomotive assemblies fabricated with Tube-Turn welded fittings



Using the one million lb. Southwark-Emery testing machine for testing locomotive driving rods. Left—Compression test to develop stress distribution. Right—Tension test. Note the Huggenberger tensometers and Whittemore strain gage

Research Pays Big Dividends

Through scientific analysis the Chesapeake & Ohio exercises better control over materials and supplies purchased and is developing ways to extend the service life of equipment

THE Chesapeake & Ohio maintains rigid control over the inspection and utilization of thousands of items comprising the buying list of materials, supplies and fuel which are purchased annually. To assure that all purchases are furnished in accordance with its specifications and to conduct research and investigations in conjunction with the selection and use of materials and supplies, the C. & O. established modern chemical, metallurgical and physical testing laboratories at Huntington, W. Va., in 1929.

As a result, scientific research has eliminated many failures of locomotive and car parts; has led to redesigning locomotive side rods and other parts for better service; has provided authentic data for use in selecting the most suitable materials for coal cars; has been instrumental in prolonging the service life of car axles, coupler knuckles and reclaiming journal box packing; and has developed more accurate control over the heat-treatment of steel members and better methods for cleaning locomotive parts. Research also has determined the most efficient fire-retardant treatment for structural lumber and has led to the development of many other processes and devices which promote safety and economy in railroad operation.

The C. & O. laboratories have shown consistent progress in technological work and today are among the best equipped in the country. Their standard equipment includes Burrell high temperature furnaces for determining the carbon content of iron and steel by combustion. Emerson calorimeters for ascertaining the B. t. u. value of coal; a Burrell furnace for determining the fusibility of coal ash; paint spray booths for preparing paint panels for exposure in Atlas accelerated weatherometers or in a National weathering unit, in conjunction with test racks for outside exposure of paint panels on the laboratory roof. Other equipment includes International centrifuges for analyzing paints and complete equipment for the analysis and testing of all types of lubricants. Equipment also is available for testing and

analyzing all types of wood preservatives, fire-retardant treatment and fire-retardant paints.

The metallurgical laboratory is equipped with the latest type Bausch & Lomb research metallurgical microscope, a Burrell specimen mounting press, Burrell belt grinder, automatic and manual polishing machines and 8 in. by 10 in. Eastman view cameras. Control of heat treatment of locomotive forgings, rivets, rail, etc., is also under supervision of this department and gas and electric muffle furnaces are used for experimental work in this connection. A darkroom with facilities for developing negatives and printing photographs completes this department, which investigates failed material to determine and, if possible, correct the cause of failure.

The physical testing laboratory is equipped with tensile, compression and bend testing machines, hardness testers, a fabric tester, ball-bearing testing machine, a 60,000-lb. and a one million-lb. Southwark - Emery Universal testing machine. The latter is 27 ft. high and has a maximum clearance of 19 ft. between jaws. It has proved very adaptable and has made possible many of the outstanding investigations that have been conducted in this laboratory. It is being utilized by the maintenance of way department for testing deflection and stress of bridge timbers, rail and compromise joints, concrete culverts, pile trestle sections and continuous welded rail; the mechanical department uses it extensively for testing heavy steel plates, built-up coupler knuckles and large bars.

Under the leadership of the engineer of tests, a staff of 14 trained chemists, metallurgists, engineers and technicians, divided into two sections, is engaged in laboratory and field work. The chief chemist and laboratory supervisor is in charge of the chemical and metallurgical laboratories with a staff of three chemists and one metallurgical chemist, while a foreman directs the activities of the physical laboratory.

Better Steel for Coal Cars

During 1945 coal constituted 77 per cent of the total tonnage hauled by the C. & O. To handle this traffic 58,895 coal cars were required, all of steel construction. The materials used are subjected to severe deterioration, due to atmospheric corrosion, the chemical action of acid leaching from coal and also to the abrasive action of coal itself. To determine the relative resistance to corrosion and abrasion of the various types of steel used in the construction of these cars, technicians of the physical testing laboratory designed and built a rotary abrasion testing machine which permits 12 steel sample plates, 4 in. by 8 in., being fastened rigidly to a shaft which rotates at the rate of 6 revolutions per min. within an enclosed frame which is filled with coal. The machine is also designed to vibrate as the shaft revolves and water in sufficient quantity to wet the coal thoroughly is applied at 24-hr. intervals to simulate rain. Driven by a worm gear, the machine is powered by an electric motor; lubrication is continuous, being provided under pressure by a locomotive lubricator.

This testing device simulates actual service conditions and the latest test required approximately four years to complete, with periodic inspections of the test plates each six months. The coal was changed weekly or whenever it became pulverized.

The increased speed and weight of modern locomotives demands more exacting methods of determining the revolving weight of the back end of locomotive main rods for counterbalancing. It is well known that the practice of determining the revolving weight by weighing is unsatisfactory because it assumes that the center of percussion and the center of gravity are at the same point.

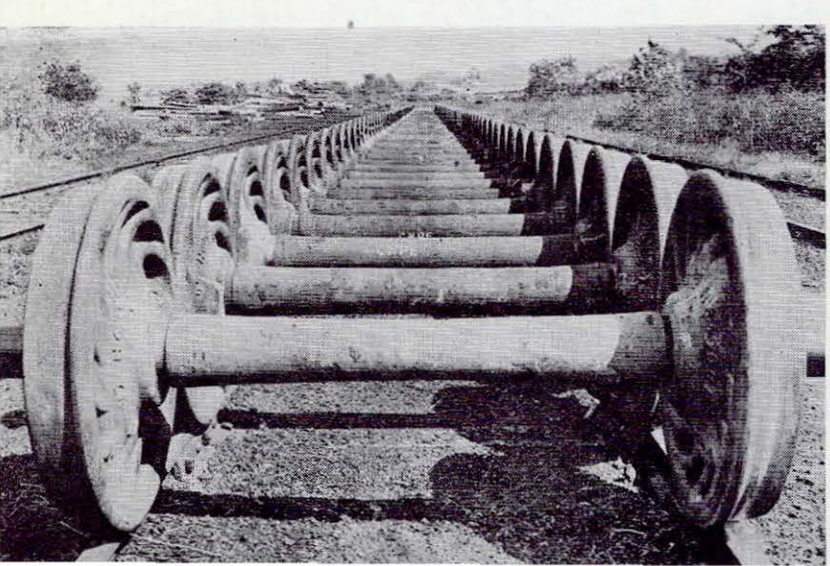
In order to ascertain correctly the revolving weight of the back end of these main rods by determining the center of percussion, it is necessary to swing the rod as a pendulum from the crosshead end of the rod. To accomplish this in the C. & O. laboratory, two sets of ball bearings are pressed into the front end of the rod in place of the bronze bushing. A special device is attached to the lower head of the large Southwark-Emery testing machine and the front end of the rod is placed in this device with the pin resting in two V-notched blocks. The head of the testing machine is then raised, permitting the rod to swing free. The center of percussion is obtained by counting the number of double swings (usually 50) through an arc of 20 deg. and recording the time, and then dividing an established factor by the square of the number of double swings per second. To obtain the revolving weight, the scale weight of the back end of the main rod is multiplied by the ratio of the distance in inches from the center of the crosshead pin to the center of percussion to the length of the main rod center to center in inches.

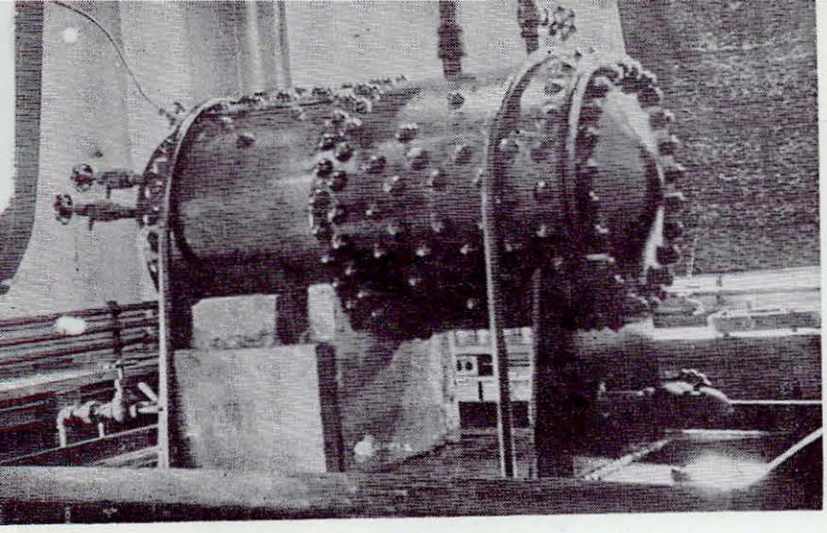
Longer Life for Axles

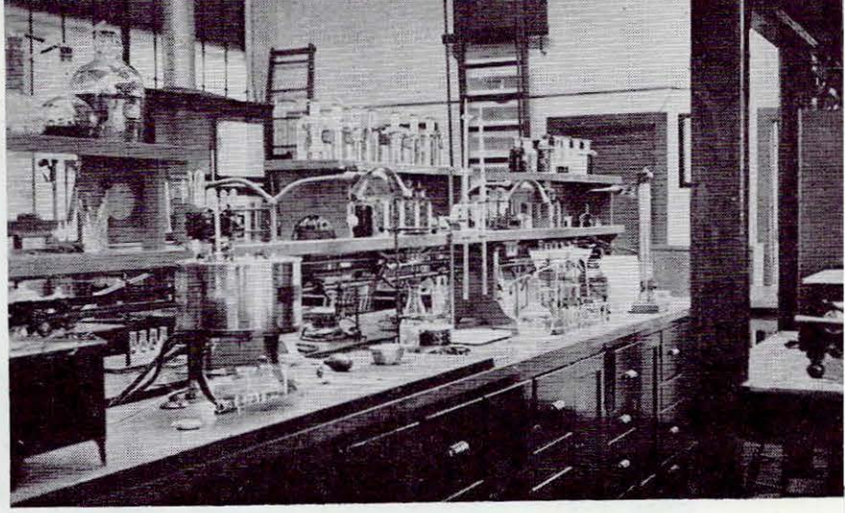
As a result of a series of tests conducted by the laboratory staff the C. & O. has developed a method of inspecting car axles overheated in service. These tests were conducted in cooperation with the operating departments and the method developed eliminates the possibility of axles being returned to service which might be subject to failure due to previous overheating. It also makes possible the selection of axles that are safe to reclain and return to service, thereby avoiding waste and increasing axle life.

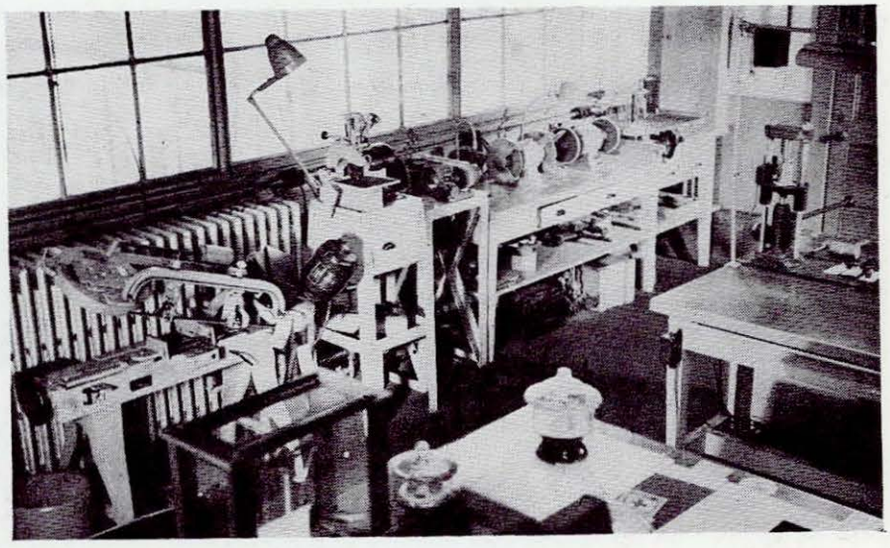
In an effort to improve operation and reduce failures, stress analyses have been

Below—Car wheels and axles are subjected to scientific research. Right—Illustrating the method of determining stresses introduced by static load in segment of driving wheel center between axle and crank pin bore









Above left—Experimental boiler constructed to determine the cause of boiler steel failures in connection with salt concentration in boiler water. It is constructed of ½ in. boiler plate; 21 in. in diameter; has a capacity of approximately 35 gal.; and was built in two courses each 20 in. long. Above right—Partial view of chemical laboratory showing the equipment used for testing fuel oil, lubricating oils and greases. Right—View of the metallurgical laboratory showing the equipment used for the sawing and polishing of test specimens

made of various locomotive and car parts. A typical example is the case of locomotive side rods, in which test rods were suspended in the large Southwark-Emery testing machine from pins fitted to the standard tolerance for crank pins and both tension and compression loadings were applied. Strain gage readings were then taken to show the areas of maximum and minimum stress. From the laboratory analysis of these stress values it was possible to redesign the side rod to eliminate failures and also reduce weight.

Economical Heat-Treating

The heat-treating of locomotive forgings, while not a new practice, nevertheless has been greatly expanded and improved in the past few years. A method developed and adopted by the C. & O. has brought about considerable savings in that the forgings are neither tempered nor tested for physical properties until they are properly normalized.

The most general practice in heat-treating locomotive forgings is to normalize, temper and submit a prolongation for determining the physical properties of the steel. The C. & O. method is first to normalize the forging; a specimen is then taken for examination of the microstructure. Further treatment is governed by the result of this examination. Should the structure be found satisfactory, the forging is tempered and tested, but if the structure does not prove satisfactory it is renormalized and again examined; this procedure is followed a maximum of three times when necessary.

C. & O. laboratory technicians collaborated with other investigators in constructing an experimental boiler that was used in investigations of so-called "caustic embrittlement" in steam boilers and the relation between stress in the boiler metal and the development of failure under specific solution conditions. The results of these tests, together with data developed by other investigators, such as the U. S. Bureau of Mines laboratories, have added greatly to the knowledge of the causes of the failure of boiler steel under caustic and stress conditions, and the means of correction where such conditions exist.

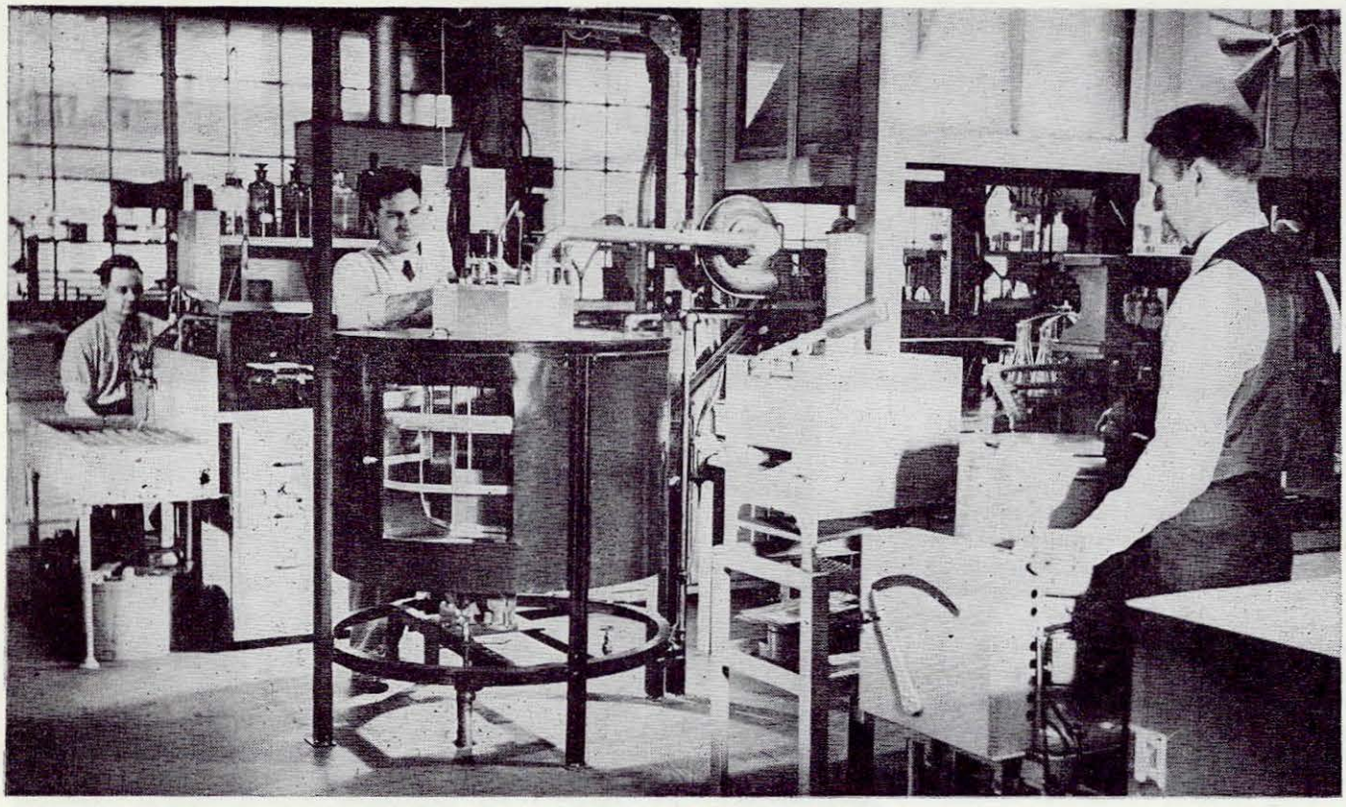
Reuse Journal Packing

An appreciable saving has also been achieved through laboratory research in conjunction with absorption tests of journal box packing. As a result of a specially constructed test rack the C. & O. has found it both possible and profitable to reuse old journal packing by chemically cleaning and then mixing it with new material. Through these investigations it has been possible to determine to what extent old packing may be reused and in what ratio it is to be added to new material.

Cold-Bend Techniques

To test the used material, four test tubes containing the packing are inserted in the specially constructed steel-base test rack. Each tube is carefully weighed to assure that all weigh the same. Car oil placed in the base of the test rack is heated by an electric heating element to approximately 170 deg. F. The time required for the oil to climb to the top of the test tubes is carefully checked and when it reaches the top of the tubes and has completely saturated the packing the tubes are removed from the test rack. All excess oil is drained off and the tubes are again weighed to determine the weight of the oil that is absorbed.

A device for conducting cold bend tests on steel specimens has been recently developed by the laboratory technicians and a specimen may be given a 180-deg. bend around any specified di-



Quality and uniformity are of the utmost importance in protective coatings; the C. & O. maintains a National Weathering unit and two Atlas Weatherometors for testing all paints and protective coatings

ameter in a fraction of the time formerly required. This device consists of a steel base on which are mounted two brackets, each carrying a 3-in. roller. These brackets are held at specified distances by tie-rods, the distance being adjustable to fit the thickness of the specimen being tested. This testing device is used in conjunction with the 60,000-lb. Southwark-Emery testing machine.

Salvage Coupler Knuckles

Coupler knuckles are subjected to terrific wear in service and as an aid in determining the most efficient welding method of rebuilding these knuckles the test department has conducted extensive tests involving various welding procedures. In conducting these tests, the drawheads to which the coupler knuckles were attached were gripped in the wedges of the large Southwark-Emery testing machine and pressure was applied at the coupler knuckle to simulate actual loading conditions. This pressure was applied in increments of 25,000 lb. until failure of the knuckle occurred. After each 25,000-lb. loading increment was applied, A. A. R. test gages were used to check distortion. An analysis of these tests made possible the selection of the most satisfactory method of reclaiming coupler knuckles that have been worn to the condemning limit.

A method of fusing the bronze to the steel backing metal of locomotive driving boxes in the bronze pouring operation has also been developed by the laboratory staff and is proving successful in preventing bronze side liners from becoming loose and falling off while in service. Prior to the adoption of this method it had been the practice to hold side liners and hub liners in place by a system of dovetails and plate screws. Besides being expensive, this procedure had numerous defects which the test department was assigned to remedy. After considerable research the fusing system was adopted, which, in addition to making possible an appreciable savings in material and labor, has also reduced the time required for installing replacement parts.

Improved Cleaning Methods

Research is also responsible for improved methods in the cleaning of locomotive parts. Through investigations of the concentration of cleaning solutions in lye vats it has been found that by laboratory control proper concentration of the cleaning mixtures can be maintained in accordance with manufacturers' recommendation, thus assuring maximum cleaning results and also making possible a substantial saving in the cost of cleaning solutions.

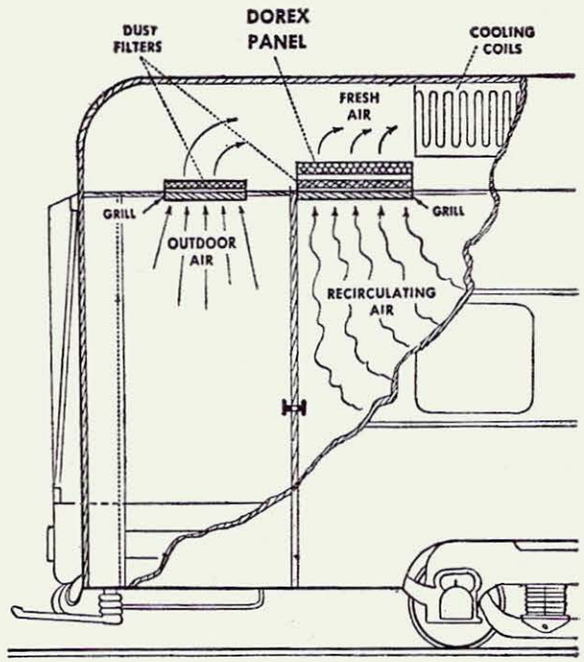
Present-day speeds of both freight and passenger trains require lubricants that are adapted to these specific requirements and emphasize the need for a machine for testing not only lubricants, but also the bearing metal, composition of steel, characteristics of dope, speed, load and alignment of parts. Laboratory technicians developed a machine for this purpose and later, to supplement this work, a Timken wear and lubricant testing machine was purchased to obtain information of a more technical nature, especially with respect to film strength.

Unloading Facilities

The C. & O. maintains extensive facilities for loading and unloading commodities for lake and ocean shipment. These include wharves, piers and docks, all of which have a high fire-destruction rating. To lessen this and other fire hazards this railroad was one of the first to adopt lumber chemically treated to resist fire. Specimens of lumber treated with many types of fire-retardant solutions were tested in the laboratory with special fire tube and crib equipment to determine the most effective treatment. In this connection, fire-retardant paints also have received considerable study in the laboratory and results have measured their effectiveness over ordinary paints in preserving structures susceptible to fire damage.

Air Purification in Conditioned Railway Passenger Cars

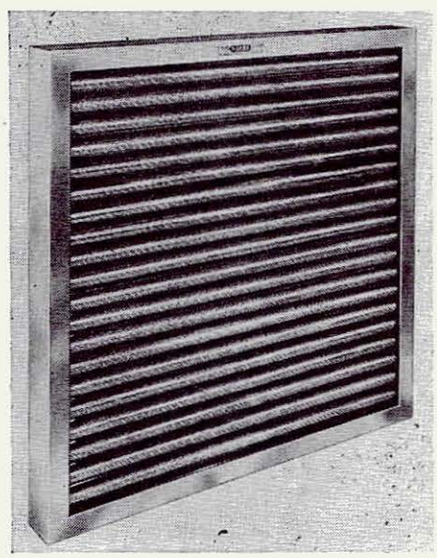
By F. H. MUNKELT
Vice-President, W. B. Connor Engineering Corporation



A typical installation of DOREX activated-carbon panel showing the relative amount of space taken by the panel

ONE of the most stubborn problems faced by designers of air-conditioned railway cars has been the provision of adequate car ventilation while maintaining a comfortable car temperature. Railroad cars must carry their air-conditioning plants "on their backs" —each car having its own individual system. Limitations of power, weight and, particularly, space for the conditioning apparatus restrict the air-circulating capacity for the average 64-passenger coach to between 2,000 and 2,400 cu. ft. of air per min., of which, for the same reasons, not more than 25 per cent or 500 to 600 cu. ft. per min. can be outdoor air make-up, the balance being recirculated. This means that less than 10 cu. ft. per min. (usually nearer 7½ cu. ft. per min.) of fresh air per occupant is added, whereas, by recognized ventilation practice, the very minimum that will maintain agreeable air quality is 15 cu. ft. per min. per non-smoking and 30 cu. ft. per min. per smoking passenger.

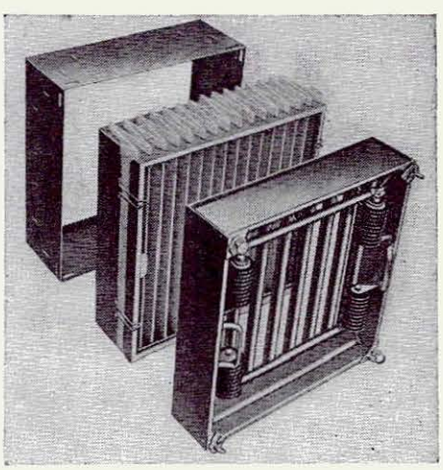
The problem is aggravated in dining, club and lounge-tavern cars where the added accumulation of odors from food, beverages and smoking requires a ventilation rate equivalent to 30 cu. ft. per min. or more per occupant. Likewise, in room cars designed for a normal occupancy of 22 to 24 passengers as many as 50 or more persons may congregate at times—both en route and, more particularly, in terminals when visitors are aboard. After such groups disperse, the stale, odorous air, 75 per cent of which is constantly being recirculated throughout the rooms, becomes a source of discomfort. On occasion, these odors are so pronounced at the end of a run that deodorant sprays are used to mask their disagreeable effect.



The panel consists of a lightweight metal frame housing a battery of perforated tubes containing activated carbon

Railroad air-conditioning engineers have long known that adequate ventilation—sufficient fresh air—offers the only cure for these conditions but, if the requisite volume of *fresh* air must be exclusively *outdoor* air, the conditioning load it imposes becomes prohibitive. In other words, over and above carrying the fixed internal load (heat gain or loss, radiation, infiltration, etc.) the conditioning plant that can be accommodated (7 to 8 tons of refrigeration capacity) is adequate for only an outdoor air load not exceeding 25 per cent of the total air. Fortunately, however, a solution has been found and is being adopted by railroads and car builders alike. This solution consists of purifying and thus converting recirculated air to fresh air in an amount sufficient to compensate for the ventilation deficiency and, consequently, without increasing the conditioning load.

The volume of outdoor air ordinarily introduced into a railway car is more than ample for oxygen replenishment. What is needed is not more oxygen but more *fresh* air, i. e., air that is uncontaminated. Even outdoor air is not always "fresh." Air "quality" or freedom from odors is not affected by oxygen content. From a physiological standpoint a human being's need of outside air for oxygen is practically negligible.



Exploded view of electrostatic filter showing ionizer, filter medium and casing

Activated-Carbon Air Filtration—A Typical Example

STANDARD VENTILATION REQUIREMENTS FOR COMFORT

Passengers smoking (⅓) = 22 × 30 cu. ft. per min. = 660 cu. ft. per min.
Passengers not smoking (⅔) = 42 × 15 cu. ft. per min. = 630 cu. ft. per min.

Total fresh air needed = 1,290 cu. ft. per min.

and

Fresh air required per passenger = 1,290 ÷ 64 = 20 cu. ft. per min.

VALUES IN AIR-CONDITIONED CARS—WITHOUT CARBON AIR PURIFICATION

Recirculated stale air = 75 per cent of 2,400 cu. ft. per min. = 1,800 cu. ft. per min.
Fresh air = 25 per cent of 2,400 cu. ft. per min. = 600 cu. ft. per min.

and

Each passenger gets 600 ÷ 64 = 9.4 cu. ft. of fresh air per min.—about half as much as needed

VALUES IN AIR-CONDITIONED CARS—WITH CARBON AIR PURIFICATION

Fresh air = 25 per cent of 2,400 cu. ft. per min. = 600 cu. ft. per min.
Recirculated air recovered by Dorex and reconverted to ventilation air = 50 per cent* of 1,800 cu. ft. per min. = 900 cu. ft. per min.

Total fresh air available = 1,500 cu. ft. per min.

and

Each passenger gets 1,500 ÷ 64 = 23.4 cu. ft. of fresh air per min.

* Adequate percentage in this case. Percentage can be raised or lowered by installing panels to suit car requirements.

This is true for occupants of almost any type of structure. Research has proved that an air supply of one cubic foot per minute per person contains more than an ample supply of oxygen. Air becomes stuffy and stale when it is filled with an accumulation of odors, not because it lacks oxygen.

Activated-Carbon Filtration

The equipment used to purify the recirculated air and which has been designed especially for the transportation field is activated-carbon filtration, a rather recent development in air conditioning. Individual units that can be accommodated within the limited space available in railway cars have been developed by the W. B. Connor Engineering Corporation, New York, and are distributed in the railroad field by Tuco Products Corporation, New York. These units are rectangular panels with the same over-all dimensions as standard dust filters, and they are installed or removed with the same facility as the latter. Each panel contains one or more rows of evenly spaced, perforated, carbon-filled metal tubes housed in a frame designed so that a maximum adsorbing surface is exposed with a minimum resistance to air flow. Return air passes uniformly through the entire surface area of the panel and a definite percentage of this air is converted to fresh air by direct passage through the carbon bed. A typical example of the application of air recovery panels to provide adequate ventilation in a railway car (smoking permitted) carrying an average of 64 passengers is given in the accompanying table.

Activated carbon efficiently removes the source of irritation in tobacco smoke, particularly the dominant and irritating pyridine gas. If it is desired to eliminate the smoke haze (solid matter) as well, this can be accomplished very effectively with a recently developed electrostatic air filter. A replaceable, electrically charged cellulose filter, each tiny fibre of which acts as a magnet for previously ionized dust particles, is a wellnigh impenetrable barrier for air-borne dirt.

The cost of activated-carbon air purification is remarkably low, about two per cent of the entire air-conditioning cost.

In a 64-passenger coach, for example, each passenger receives nearly three times as much fresh air as formerly. Carbon air-recovery panels are in use on existing cars and have been specified for a large number being built or planned.

* * *

Welded Fittings

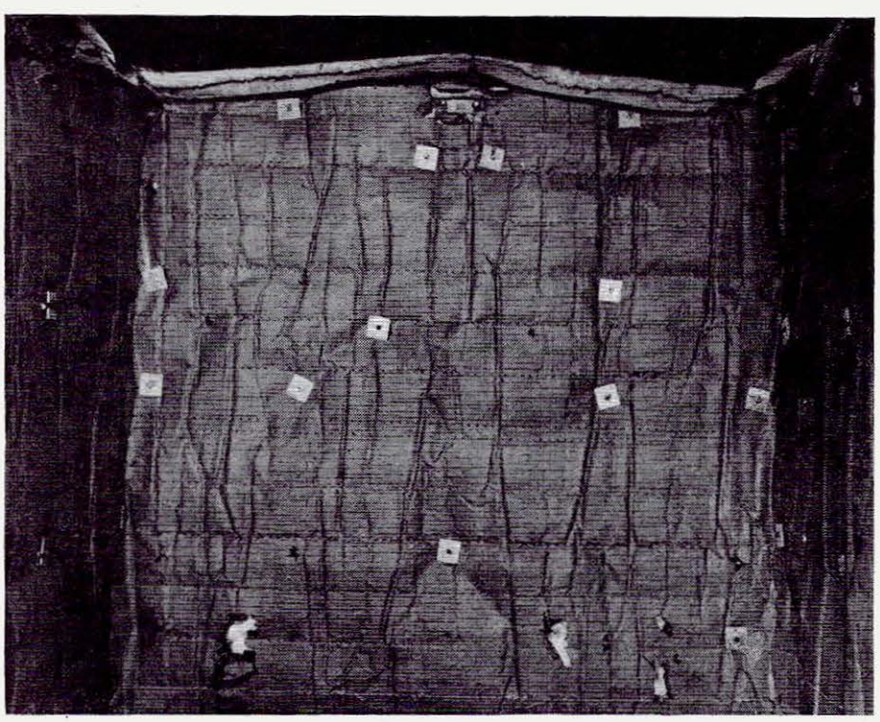
(Continued from page 92)

ance, less weight, lower maintenance cost, savings in space requirements, and ease in designing all types of piping.

Lightweight Fiberglas Insulation

Estimated weight savings of more than 800 lb. per car are being secured in the all-welded refrigerator cars which the General American Transportation Corporation is now building for the Pacific Fruit Express and the Atchison, Topeka & Santa Fe by the use of extremely lightweight Ultralite Fiberglas insulation.

The illustration shows the application of Ultralite, made by the Gustin-Bacon Manufacturing Company, of Kansas City, Mo., to car sides, ends and roofs. This lightweight insulation was developed as aircraft insulation during the war and is now available to railroads and car builders. It is said to be particularly adaptable to both freight and passenger car use because of its lightness of weight combined with high thermal and acoustical efficiency. Being made of glass, it is incombustible and non-corrodible and does not absorb moisture or odors, nor does it provide sustenance for vermin and rot-inducing agents. Constructed as a resilient blanket, Ultralite tends to stay in place and not settle or shake down under vibration.



Second course of side and end insulation in position, showing method of fastening

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Among other reasons against this rate reduction under present unsettled conditions, Mr. Schardt mentioned the existing statutory requirement that the present air mail rate revert to six cents six months after the legal termination of the war; the fiscal 1946 deficit of the Post Office Department, estimated at $181 million; the rising cost of operations affecting airlines and all postal services; and the fact that the net revenue from air mail at present produces a lesser ratio of profits for the department than is produced by the regular first class mail at the rate of three cents per ounce.

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(*Continued on page 106*)

gross ton-miles and decrease in train speeds from 1938 through 1942, but showed a consistent upturn from this point through 1945. The reversal in the trend of man-hours of maintenance therefore occurred earlier than the changes in the trend of either average train speed or gross ton-miles. In the period 1938-45 the lowest level of man-hours per million gross ton-miles was reached in 1942 at 248. Thereafter the maintenance man-hours rose steadily to 281 in 1945, the highest level for the period 1938-45, although the speed of trains declined still further in the next succeeding year and gross ton-miles continued to increase for over two years more. In 1945, however, train speed was still substantially below the levels prevailing in the pre-war years. It is possible that the rather sharp rise in maintenance man-hours since 1942 is attributable in part to an effort to overcome accumulated deferred maintenance."

National Metal Exposition

The American Society for Metals, the American Welding Society and the Iron and Steel division and the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers will participate in the 28th National Metal Exposition to be held in the municipal auditorium, Atlantic City, N. J., from November 18 to November 22, inclusive. The American Industrial Radium and X-Ray Society also will participate in the exposition from November 19 to November 22.

Advance programs of the participating societies reveal that unusual interest is being displayed by the authors of technical papers, it was announced. The program committee of the American Society for Metals has reported that more than twice the normal number of papers have been submitted by members for consideration and possible presentation before the society's session during the exposition. Exhibit space will be utilized to show advances in production and manufacturing techniques developed during the past five years.

Idle Rail Workers Got $20½ Million Insurance Money

Insurance benefits totaling $20,500,000 were paid to "unemployed" railroad workers during the year ended June 30, according to a recent statement issued by the Railroad Retirement Board at Chicago. This sum was said to be the largest paid by the board in one year, and formed almost one-third of the total for the seven year period in which the Railroad Unemployment Insurance Act has been in operation.

More than one-half of the total for the 12-month period was paid in the last quarter of the year and nearly two-thirds was received by workers living in northern states East of the Mississippi river. The statement declared that strikes in other industries and adjustment to post-war levels, affecting employment on eastern roads in particular, were largely responsible for the record payment.

More than 156,000 railway workers were compensated for unemployment experienced during the benefit year ended June 30, or approximately seven per cent of those qualified for benefits on the basis of employment in 1944. Almost 10 per cent of the beneficiaries were idle long enough to receive benefits for the equivalent of five months of total unemployment, the maximum compensable period. Recipients of the benefits included: laborers, 40 per cent; skilled workers, helpers or apprentices, 25 per cent, and train and engine service workers, 20 per cent.

Army Fails to Get Preference Rating for River Work

Acting upon the suggestion of Director Steelman of the Office of War Mobilization and Reconversion, the Civilian Production Administration has denied a War Department application for authority to assign preference ratings for materials used by the Army's Corps of Engineers on rivers and harbors and flood control projects. The War Department sought to obtain the authority through an amendment to its so-called Directive 41, originally issued to give it authority to rate purchases of materials necessary for military construction projects.

Director Steelman's suggestion to C. P. A. came in a July 15 letter which said that "construction by the federal government should not proceed under preference ratings except under the most compelling considerations." A C. P. A. announcement of the same day revealed that the War Department request had been denied and went on to express C. P. A. Director Small's "agreement with the O. W. M. R. policy that preference ratings should be kept at a minimum."

More Time for C. V. Return to Order on Signals

The Interstate Commerce Commission has extended from July 8 to August 1 the date by which the Central Vermont is required to file a formal return to the recent order directing it to show cause why it should not be required to provide "adequate train order protection or adequate block signal protection for the movement of track motor cars on its line." As noted in the *Railway Age* of June 22, page 1233, the order resulted from the commission's investigation of an April 24 head-end collision between a freight train and a track motor car on the C. V. near Sharon, Vt.

Warehouses Must Get Same C. & D. Allowance as Shippers

Interstate Commerce Commission contentions that carriers must not pay warehouses greater allowances than are available to individual shippers and receivers for picking up and delivering freight at carrier stations have been upheld by the United States District Court for the Northern District of Oklahoma. While the decision of July 8, in *Interstate Commerce Commission v. Harvey D. Jones, doing business as Jones Truck Line, et al,* involved I. C. C. actions for injunctions against motor carriers, the commission's Bureau of Inquiry has called it to the attention of the railroads, asking to be advised whether or not carriers now paying higher allowances to warehouses will abide by the court's ruling. The bureau added that it would be the purpose of the commission to investigate instances of continuance of such higher allowances with a view to the institution of such court proceedings as may appear warranted.

The truckers involved in the court case were paying Tulsa, Okla., warehousemen an allowance of 10 cents per 100 lb., while their tariffs published an allowance of five cents for shippers who performed their own pick-up and/or delivery trucking. The truckers paid 10 cents per 100 lb. to local draymen with whom they had contracts, and they maintained that the warehousemen were in the same position as those cartage agents. The court disagreed, holding that warehousemen "act in the capacity of agents for the owners of the goods," and that as such they were "shippers" in so far as the tariffs involved were concerned.

It went on in its ruling that the allowance to warehousemen would have to be the same as that available to shippers, adding that any contracts designed to change the status of warehousemen from that of shippers or consignors of freight to that of agents for line-haul carriers were "obvious subterfuges" employed for the express purpose of circumventing the provisions of the tariff. "Such practices have resulted in repeated discriminations and in unfair and destructive competitive conditions such as the Interstate Commerce Act expressly forbids."

North Western to Add Omaha "400" Train Next Year

As an addition to its fleet of "400" streamliner trains, the Chicago & North Western has completed plans for the inauguration, in 1947, of a new train to run between Chicago and Omaha, Neb. The unit will operate on a fast, daytime schedule which, according to North Western officers, will be comparable to the running time of the fastest West Coast trains.

Equipment of the new streamliner will consist of air-conditioned coaches, parlor cars, dining car, and a tap-diner-lounge car, all constructed in the most modern design. The train will be pulled by a 4,000-hp. Diesel-electric locomotive.

Arrangements for Temperature Control Services Approved

Making its ninth supplemental report in Ex Parte No. 137, the Interstate Commerce Commission, Division 3, has approved various additional arrangements for protective services, i. e., temperature control services for the protection of perishable freight against heat or cold. The report, made public last week, was dated July 2.

It approved the modification of certain unit prices provided for in contracts between the American Refrigerator Transit Company and each of the following roads: Denver & Rio Grande Western; International Great Northern (including Asherton & Gulf and San Antonio Southern); Missouri-Illinois; Missouri Pacific; and Texas & Pacific. Also approved was an amendment to a contract between American and the M. P. with respect to icing facilities at Dupo, Ill.

The report further approved agreements covering protective service between the Delaware, Lackawanna & Western and the City Ice & Fuel Company, effec-

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(*Continued on page 106*)

Crosser Security Bill Reported to Senate

Barkley gets committee approval of measure by vote of 11 to 9

With Majority Leader Barkley heading the drive for expedited handling, the Senate interstate commerce committee on July 12 reported favorably to the Senate the House-approved Crosser bill embodying the Railway Labor Executives Association program for liberalizing the Railroad Retirement and Railroad Unemployment Insurance acts. As noted in the *Railway Age* of July 13, page 65, the bill, H. R. 1362, was passed by the House in its original form after a group of moderating amendments sponsored by Chairman Lea of that body's committee on interstate and foreign commerce had been voted down.

The Senate committee approved its favorable report by a vote of 11 to 9. Mr. Barkley, as ranking majority member of the committee, had assumed charge of the bill in the absence of Chairman Wheeler whose vote, however, was recorded in favor of the report, as was Mr. Barkley's. Other affirmative votes came from Senators Johnson of Colorado, Tunnell of Delaware, McFarland of Arizona, Myers of Pennsylvania, McMahon of Connecticut, Mitchell of Washington, Briggs of Missouri, Huffman of Ohio, Democrats, and Shipstead of Minnesota, Republican. Committee members voting against the favorable report were Senators Stewart of Tennessee, Hoey of North Carolina, Johnston of South Carolina, Democrats, White of Maine, Austin of Vermont, Reed of Kansas, Hawkes of New Jersey, Moore of Oklahoma, and Capehart of Indiana, Republicans.

"Without Amendment"—The report went to the Senate in two parts, Part I being the committee majority's argument in support of its recommendation that the Senate pass the House-approved bill "without amendment," while Part II explained the measure in detail. The former referred to the "extensive hearings" held before the House committee, the record of which was available to the Senate subcommittee which considered the identical Senate bill (S. 293) introduced in January, 1945, by Senator Wagner, Democrat of New York, for himself and Senator Wheeler. The Senate subcommittee, which was headed by Senator Johnson of Colorado, held brief hearings on S. 293 in July, 1945, but its report to the full committee included no recommendation, being confined to an explanation of the bill and the issues it raised.

In its undertaking to justify its support of the bill, the committee majority asserted that "for several years it has been apparent that Congressional action for the improvement of the railroad retirement and unemployment insurance systems is urgently necessary." It went on to recall that "virtually all members of Congress" have been petitioned on the matter with suggestions "numerous and varied." Next it told how a Railway Labor Executives Association committee gleaned from the "multitude of recommendations" the bill's proposals which were put forth as a program "that would reasonably meet the causes of dissatisfaction and would at the same time be sound, equitable, and financially and administratively feasible." The committee majority adopted this appraisal of the bill's provisions. In enacting the proposed legislation, the report said, "Congress will be manifesting a proper concern with the effective functioning of the railroad industry, which is still the principal channel of interstate commerce."

Finds Taxes Adequate—Continuing, the report defended the principal new Retirement Act benefits proposed, and contended that the additional five per cent tax will support the liberalization and make the system as a whole actuarially sound. With respect to the liberalization of the Unemployment Act with new provisions for higher unemployment payments and sickness and maternity benefits, the report said that the present tax (3 per cent of taxable payroll, paid entirely by the carriers) will be sufficient to support the proposed set-up. In this connection it said that "there is no essential difference in principle between the compensability of unemployment due to lack of a job and the compensability of unemployment due to sickness."

With respect to the extended coverage, the report said that the purpose of those provisions of the bill was to insure the inclusion of "all elements in the railroad industry such as railroad subsidiaries engaged in performing service in connection with railroad transportation, railroad associations, tariff bureaus, demurrage bureaus, railway labor organizations, etc." Its justification for the inclusion of forwarders was a statement that those agencies "are intimately associated with the railroad industry." The report estimated that the extended coverage provisions would bring in no more than 10,000 additional persons.

Meanwhile it denied statements to the effect that the bill would cover various others such as icing companies which service railroad refrigerator cars. "The committee," the report said in that connection, "would like to state categorically that there is no purpose or intent to include such persons as employers under the act and that it is the unanimous understanding of the committee that such persons are not covered. The committee also unanimously understands that . . . there is no purpose or intent to include warehouse or trucking companies, or individuals carrying on either of such businesses within the term 'employer' if they are not owned or controlled directly or indirectly, by, or under common control with, a carrier subject to Part I of the Interstate Commerce Act."

Difference of Opinion—Nevertheless a committee member who voted against the report, Senator Hoey of North Carolina, has served notice of his intention to propose a series of amendments designed to clarify the coverage provisions. And Chairman Lea of the House committee insists that the bill in its present form would extend the coverage to "a large number of business concerns which have little if

(*Continued on page 106*)

Net at 1940 Level Seen for This Year

I. C. C. bureau makes "rough estimates" of prospective results with rate boost

Freight rate increases which became effective July 1, as authorized by the Interstate Commerce Commission's June 20 report in Ex Parte 162 and the reopened Ex Parte 148 proceeding, will augment 1946 revenues by approximately $185 million, thus making this year's net railway operating income $609 million and its net income $189 million, according to "rough estimates" set up by the commission's Bureau of Transport Economics and Statistics in the latest issue of its "Monthly Comment." Contrasting with net incomes of the past five years ranging from 1942's $902 million to 1945's $447 million, this estimated $189 million would be the same as the net income reported for 1940.

Finds Roads Better Off—In the latter connection, however, the bureau hastened to build another compilation of data designed to show that the railroads' financial position is now "much stronger" than it was in 1940. This compilation indicates the net working capital position as of April 30 in 1946, 1945, and 1940, the excess of current assets over current liabilities on those three dates being given, respectively, as $2,065 million, $1,931 million, and $377 million. The April 30, 1946, ratio of current assets to current liabilities—2.01—is called "the highest April 30 ratio in the period 1931-1946."

The "Comment's" further discussion of these figures quoted from that part of the rate decision which indicated the commission's view that the railroads should expect to live to some extent on their "fat" in these times of unstable industrial conditions. The citation was the commission's remark that "the current financial position of the railroads as a whole indicates that they are now better fortified to meet the possible shock of disturbed industrial conditions than heretofore."

The bureau's "rough estimates" of what this year's results will become with benefit of the rate increase are derived from the $390 million figure, given in the press release accompanying the June 20 decision as a commission-staff estimate of what the authorized advance would amount to on an annual basis. While the projected 1946 results are less favorable than the commission's projections because the bureau used some different figures, including a higher operating-expense factor to reflect the additional 2½ cents per hour wage increase that came out of the strike settlement, the explanation of the estimating formula indicates that it conformed generally to the June 20 decision's "Basis C," which was the more optimistic of the two forecasts there employed to prepare the way for a heavy discounting of the railroad presentation as to the traffic and revenue outlook. The June 20 decision was reviewed in the *Railway Age* of June 29, page 1262.

Optimistic Estimates—Thus the esti-

mated freight revenues for 1946 before the rate increases were calculated by taking the gross freight revenues from the freight commodity statistics of Class I roads for the years 1941 and 1945 "on the assumption that the composition of traffic and revenues per ton for each of the 157 classes of commodities would fall somewhere between these two sets of figures." Adjustments were made for certain commodities "where the 1946 developments to date indicated that the 1941-1945 traffic pattern was probably not tenable."

This process turned up a figure of $5,989 million as the estimated 1946 freight revenue without rate increases. To this was added the estimated "gross amount" of the authorized increase ($389 million) to bring the estimated 1946 gross revenue figure to $6,378 million, on the assumption that the increases had been in effect for the full year. To get down to its estimate of $185 million additional revenue for the six months in which the increase will be in effect, the bureau took one-half of the $370 million which it called the "net amount" of the increase, explaining that "freight revenues as finally reported normally run about 95 per cent of gross freight revenues."

Then revenues other than freight revenues were estimated at four times the total for the first quarter of 1946 and operating-expense figures were adjusted to include estimates covering the 16 cents per hour wage increase retroactive to January 1 and the additional increase of 2½ cents effective May 22. From these calculations came the estimates of 1946 results which are given above, the detailed figures being as follows:

	Before freight rate increases (Millions)	Including estimates for freight rate increases (Millions)
Railway operating revenues	$7,721	$7,906
Railway operating expenses	6,516	6,516
Net railway operating income:		
Before federal income taxes	540	725
After federal income taxes	494	699
Net income:		
Before federal income taxes	120	305
After federal income taxes	74	189

With respect to the foregoing the bureau pointed out that, while its $185 million figure for additional revenue to be expected from the increases is one-half of the annual-basis estimate, revenues for the second half of the year "are usually somewhat more than 50 per cent of the total." Also it suggested that, in connection with the estimates of "net," it should be borne in mind that "no consideration has been given to tax credits which may result from loss carry-backs in federal income taxes."

Meanwhile, in making its usual analysis of the latest monthly financial reports, the bureau discovered that May's operating ratio was 92.4 per cent, a rise of 25.8 points above May, 1945's 66.6 per cent. It is next pointed out, however, that May's net railway operating deficit of $4,779,574 "was not as large as the post-World War deficit of $5,429,769 in May, 1920, after the return of the railroads to their owners by the United States Railroad Administration, or the extreme deficit of $158,582,570 in August, 1920." The "Comment's" tabulation of results for the 12 months ended with May shows how income tax credits totaling $164,583,000 converted a prospective net income deficit of $21,435,000 for that period into a black figure of $143,148,000 both figures being "partly estimated."

Revenues Down a Third—May freight revenues of the Class I roads on a daily basis were 6.2 per cent below April and 36.2 per cent under May, 1945, while passenger revenues were down 15.9 per cent and 33.6 per cent, respectively. The bureau's May freight revenue index (based on the 1935-39 monthly average as 100) was 148.7, compared with April's 158.5 and May, 1945's 233.3. The passenger revenue index was 263.3, compared with April's 313 and May, 1945's 396.7.

Another section of the "Comment" presents preliminary estimates for 1945 of the volume of inter-city freight traffic ton-miles handled by various agencies of transportation, the estimates being like those published by the commission in its annual reports, the latest of which covered the year 1944. The preliminary figures for 1945 indicate that the railroads in that year produced 689,109 million ton-miles or 68.8 per cent of the total (1,001,310 million) shown for all carriers. Comparative figures are included for the years back to 1941, the bureau's comment on the tabulation being in part as follows:

"The proportion of the ton-miles produced by the railways reached the peak during the period, 1941-1945, of 72 per cent in 1943 but declined to 68.8 per cent in 1945 which, however, was 5.2 percentage points above the 1941 proportion. The share of the highway trucks, including both for-hire and private trucks, was at a peak of 7.5 per cent in 1941 and steadily declined to 4.6 per cent in 1944 but recovered to 5 per cent in 1945. The inland waterway traffic including that on the Great Lakes also declined from a peak of 18.6 per cent in 1941 to 13.6 per cent in 1945. The ton-miles of oil pipe lines increased from a proportion of 10.3 per cent in 1941 to one of 12.5 per cent in 1945. The airway proportion of the ton-miles continued in 1945 at 0.1 per cent, although there was an increase over 1944 in the actual figures of 27.5 per cent. The only other agency estimated to have shown an increase, 1945 over 1944, was the motor truck group whose ton-miles rose 2.3 per cent. Railway ton-miles decreased 7.6 per cent, inland waterways, 9.6 per cent, and pipe lines, 4.9 per cent."

With respect to the carloading outlook, the bureau reported that the Production and Marketing Administration of the Department of Agriculture expected the July loadings of grain and grain products to average 56,750 cars weekly, 11.7 per cent below the "high level" of July, 1945, but higher than the comparable loadings of 1942. Average weekly loadings of grain and grain products in August and September are expected to be 53,450 and 50,150 cars, respectively. July livestock loadings are expected to average 14,700 cars per week, 12.6 per cent above the July, 1945, level; and the weekly loadings for August and September are expected to average 16,650 and 21,850 cars, respectively. Because of the continuing demand for the transportation of perishables and the retarded movement of empty refrigerator cars, P. M. A. expects the reefer supply to be "extremely tight in all producing areas in July and August."

As to lake-cargo coal and ex-lake iron ore, the bureau reported that coal dumpings at the lower lake ports up to June 30 were down 41 per cent from last year, while carloadings of iron ore at those ports were 60 per cent under last year. This situation was attributed "in great measure to the miners' strike in this country and also to the strike of the Canadian seamen."

Resuming Pre-War Pattern—The bureau's analysis of figures showing the "per cent eastbound (including northbound) of total loaded freight-car miles" indicated the tendency since May, 1945, of the Eastern territory movement to return to the pre-war pattern. The normal eastbound preponderance had been accentuated by war conditions, the percentage eastbound reaching a peak of 68.4 in July, 1943, as compared with 63 per cent in July, 1939. In April, 1946, the percentage had dropped to 60.1 as compared with 62.7 in April, 1939.

"In the Western district," the bureau went on, "the carriers were able to fill up formerly empty westbound cars during 1943 and 1944 and the first eight months of 1945 to such an extent that the percentage eastbound dropped in some months to 50 and below. From November, 1944, through August, 1945, as the result of the increased tempo of our war activities in the Pacific, the preponderance of traffic on western roads was westbound instead of eastbound. After V-J Day, in fact in September, 1945, this trend was sharply reversed, the percentage eastbound in that month rising to 55.3 from 49.9 in August." The figures for the first four months of 1946 indicate that the percentage of eastbound traffic on western roads is still below that in the same months of 1939; but the bureau observed that whether this situation will continue "cannot be determined until economic conditions become more settled."

With another tabulation the bureau undertook to show the correlation between train speeds and track maintenance. Asserting that wear and tear on track and structure, "of course, vary directly with changes in the volume of traffic," it went on to suggest that "theoretically, at least, there should be similar variations in wear and tear with increases or decreases in train speeds." While it was recognized that there could be no satisfactory determination of the extent to which these "theoretical variations" were realized in actual operation, a table was nevertheless set up to show the relationship between ton-miles, train speeds, and man-hours of maintenance work for the years from 1938 to 1945, inclusive. The bureau's observations with respect to the figures were in part as follows:

"Maintenance man-hours per million gross ton-miles fell with the increase in

gross ton-miles and decrease in train speeds from 1938 through 1942, but showed a consistent upturn from this point through 1945. The reversal in the trend of man-hours of maintenance therefore occurred earlier than the changes in the trend of either average train speed or gross ton-miles. In the period 1938-45 the lowest level of man-hours per million gross ton-miles was reached in 1942 at 248. Thereafter the maintenance man-hours rose steadily to 281 in 1945, the highest level for the period 1938-45, although the speed of trains declined still further in the next succeeding year and gross ton-miles continued to increase for over two years more. In 1945, however, train speed was still substantially below the levels prevailing in the pre-war years. It is possible that the rather sharp rise in maintenance man-hours since 1942 is attributable in part to an effort to overcome accumulated deferred maintenance."

National Metal Exposition

The American Society for Metals, the American Welding Society and the Iron and Steel division and the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers will participate in the 28th National Metal Exposition to be held in the municipal auditorium, Atlantic City, N. J., from November 18 to November 22, inclusive. The American Industrial Radium and X-Ray Society also will participate in the exposition from November 19 to November 22.

Advance programs of the participating societies reveal that unusual interest is being displayed by the authors of technical papers, it was announced. The program committee of the American Society for Metals has reported that more than twice the normal number of papers have been submitted by members for consideration and possible presentation before the society's session during the exposition. Exhibit space will be utilized to show advances in production and manufacturing techniques developed during the past five years.

Idle Rail Workers Got $20½ Million Insurance Money

Insurance benefits totaling $20,500,000 were paid to "unemployed" railroad workers during the year ended June 30, according to a recent statement issued by the Railroad Retirement Board at Chicago. This sum was said to be the largest paid by the board in one year, and formed almost one-third of the total for the seven year period in which the Railroad Unemployment Insurance Act has been in operation.

More than one-half of the total for the 12-month period was paid in the last quarter of the year and nearly two-thirds was received by workers living in northern states East of the Mississippi river. The statement declared that strikes in other industries and adjustment to post-war levels, affecting employment on eastern roads in particular, were largely responsible for the record payment.

More than 156,000 railway workers were compensated for unemployment experienced during the benefit year ended June 30, or approximately seven per cent of those qualified for benefits on the basis of employment in 1944. Almost 10 per cent of the beneficiaries were idle long enough to receive benefits for the equivalent of five months of total unemployment, the maximum compensable period. Recipients of the benefits included: laborers, 40 per cent; skilled workers, helpers or apprentices, 25 per cent, and train and engine service workers, 20 per cent.

Army Fails to Get Preference Rating for River Work

Acting upon the suggestion of Director Steelman of the Office of War Mobilization and Reconversion, the Civilian Production Administration has denied a War Department application for authority to assign preference ratings for materials used by the Army's Corps of Engineers on rivers and harbors and flood control projects. The War Department sought to obtain the authority through an amendment to its so-called Directive 41, originally issued to give it authority to rate purchases of materials necessary for military construction projects.

Director Steelman's suggestion to C. P. A. came in a July 15 letter which said that "construction by the federal government should not proceed under preference ratings except under the most compelling considerations." A C. P. A. announcement of the same day revealed that the War Department request had been denied and went on to express C. P. A. Director Small's "agreement with the O. W. M. R. policy that preference ratings should be kept at a minimum."

More Time for C. V. Return to Order on Signals

The Interstate Commerce Commission has extended from July 8 to August 1 the date by which the Central Vermont is required to file a formal return to the recent order directing it to show cause why it should not be required to provide "adequate train order protection or adequate block signal protection for the movement of track motor cars on its line." As noted in the *Railway Age* of June 22, page 1233, the order resulted from the commission's investigation of an April 24 head-end collision between a freight train and a track motor car on the C. V. near Sharon, Vt.

Warehouses Must Get Same C. & D. Allowance as Shippers

Interstate Commerce Commission contentions that carriers must not pay warehouses greater allowances than are available to individual shippers and receivers for picking up and delivering freight at carrier stations have been upheld by the United States District Court for the Northern District of Oklahoma. While the decision of July 8, in *Interstate Commerce Commission v. Harvey D. Jones, doing business as Jones Truck Line, et al,* involved I. C. C. actions for injunctions against motor carriers, the commission's Bureau of Inquiry has called it to the attention of the railroads, asking to be advised whether or not carriers now paying higher allowances to warehouses will abide by the court's ruling. The bureau added that it would be the purpose of the commission to investigate instances of continuance of such higher allowances with a view to the institution of such court proceedings as may appear warranted.

The truckers involved in the court case were paying Tulsa, Okla., warehousemen an allowance of 10 cents per 100 lb., while their tariffs published an allowance of five cents for shippers who performed their own pick-up and/or delivery trucking. The truckers paid 10 cents per 100 lb. to local draymen with whom they had contracts, and they maintained that the warehousemen were in the same position as those cartage agents. The court disagreed, holding that warehousemen "act in the capacity of agents for the owners of the goods," and that as such they were "shippers" in so far as the tariffs involved were concerned.

It went on in its ruling that the allowance to warehousemen would have to be the same as that available to shippers, adding that any contracts designed to change the status of warehousemen from that of shippers or consignors of freight to that of agents for line-haul carriers were "obvious subterfuges" employed for the express purpose of circumventing the provisions of the tariff. "Such practices have resulted in repeated discriminations and in unfair and destructive competitive conditions such as the Interstate Commerce Act expressly forbids."

North Western to Add Omaha "400" Train Next Year

As an addition to its fleet of "400" streamliner trains, the Chicago & North Western has completed plans for the inauguration, in 1947, of a new train to run between Chicago and Omaha, Neb. The unit will operate on a fast, daytime schedule which, according to North Western officers, will be comparable to the running time of the fastest West Coast trains.

Equipment of the new streamliner will consist of air-conditioned coaches, parlor cars, dining car, and a tap-diner-lounge car, all constructed in the most modern design. The train will be pulled by a 4,000-hp. Diesel-electric locomotive.

Arrangements for Temperature Control Services Approved

Making its ninth supplemental report in Ex Parte No. 137, the Interstate Commerce Commission, Division 3, has approved various additional arrangements for protective services, i. e., temperature control services for the protection of perishable freight against heat or cold. The report, made public last week, was dated July 2.

It approved the modification of certain unit prices provided for in contracts between the American Refrigerator Transit Company and each of the following roads: Denver & Rio Grande Western; International Great Northern (including Asherton & Gulf and San Antonio Southern); Missouri-Illinois; Missouri Pacific; and Texas & Pacific. Also approved was an amendment to a contract between American and the M. P. with respect to icing facilities at Dupo, Ill.

The report further approved agreements covering protective service between the Delaware, Lackawanna & Western and the City Ice & Fuel Company, effec-

tive July 12, 1945; between the New York Central and Merchants Despatch Transportation Corporation and City Ice, effective January 1, 1946; between N. Y. C. and M. D. T. and City Ice and Empire Ice Company, effective January 1, 1946; and between the Staten Island Rapid Transit and the Fruit Growers Express Company, effective May 1, 1946.

Car Service Orders

Provisions of Service Order No. 369, which applies super-demurrage charges on box cars, have been modified by Amendment No. 4, issued this week by the Interstate Commerce Commission to become effective July 24. The amendment provides that charges on closed box cars not subject to average agreements shall be $2.20 per day or fraction thereof for the first two days, $5.50 for the third day, $11 for the fourth day, and $16.50 per day for each succeeding day. Charges for cars subject to average demurrage agreements are to be the same, with the proviso that the $2.20 per day debit charges may be reduced or offset by accrued credits but the $5.50, $11, and $16.50 charges may not be offset.

Service Order No. 546, effective from July 12 until July 31 unless otherwise modified, directs railroads to forward via the most available open routes traffic routed over the strike-bound Mississippi Central.

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Direction 13 to Order M-21 was issued by the Civil Production Administration on July 9 to give preference on iron foundry schedules during August and September to iron castings needed for railroad brake shoes, the veterans housing program and special farm machinery products. Foundries are required to apply to C. P. A. for pig iron to be used in production of these castings.

The direction sets up a "self certification" plan under which manufacturers are authorized to certify by letter direct to the foundries that certain castings which they have ordered will be used in the manufacture of the items covered. The plan is similar to that set up for third quarter steel deliveries by Direction 12, which also put railroad brake shoes on its "critical" list. (See *Railway Age* of June 15, page 1197.) Once the preferred orders are filled, distribution of castings for other purposes is not affected by the direction.

Bert M. Jewell Retires

Retirement of Bert M. Jewell as president of the Railway Employees Department of the American Federation of Labor, a post he had held since 1922, has been announced. His successor is Fred N. Aten, vice-president of the Brotherhood of Railway Carmen.

Mr. Jewell was born in 1881 at Brock, Neb., and entered railway service at the age of 19 as a boilermaker's apprentice at the High Springs, Fla., shops of what is now the Atlantic Coast Line. After he finished training he was a "boomer," shifting from job to job and preaching the gospel of union organization in every shop he worked in.

In 1912 he obtained a job with the Seaboard Air Line at Jacksonville, Fla., where he soon became active in brotherhood politics, rising to the office of general chairman on the Seaboard of the boilermakers' union. In 1916 he obtained a "leave of absence" from the Seaboard to join the brotherhood's grand lodge staff as an organizer. During World War I he was assigned to the Washington office to represent that union in negotiations with the government, and in this position he attracted the attention of labor leaders, who in 1918 made him acting president of the A. F. of L. Railway Employees Department.

Army Loses Another Wharfage Allowance Case

Adhering to the determination reached in its recent report on the similar situation at Norfolk, Va., the Interstate Commerce Commission has found that the railroads' refusal to make an allowance for wharfage services performed by the Army with respect to shipments moving over its New Orleans, La., wharves is not an unreasonable practice nor one which results in unreasonable or unjustly discriminatory rates. The report is in No. 29185, the previous report on the Norfolk situation having been in No. 29117, as noted in the *Railway Age* of June 8, page 1153.

The present report quotes from the conclusions of the Norfolk decision, following through to say that "there are no circumstances relating to the traffic of the Army to and from New Orleans that warrant a conclusion different from that reached in respect of the similar traffic to and from Norfolk." Commissioner Aitchison, a dissenter in the Norfolk case, was this time with the majority, while Commissioners Alldredge, Splawn and Rogers were again in the minority.

Representation of Employees

Yardmasters and stationmasters employed by the Seaboard Air Line will continue to be represented by the Railroad Yardmasters of America as the result of recent elections which have been certified by the National Mediation Board. The R. Y. of A. was favored over the Brotherhood of Railroad Trainmen in both contests.

As the result of other elections, dining car employees of the Pere Marquette, who formerly were without representation, are now represented by the Hotel & Restaurant Employees International Alliance, Local 351, American Federation of Labor, while the American Train Dispatchers Association retained its right to represent Atlantic Coast Line dispatchers, having defeated a "Dispatchers' Committee."

Emergency Boards

President Truman has created an emergency board to investigate a dispute which had brought to the Denver & Rio Grande Western a strike threat from its employees represented by the Brotherhood of Railroad Trainmen. The dispute involves about 30 grievance cases that under normal procedures would have gone to the National Railroad Adjustment Board.

Chairman H. H. Schwartz of the National Railway Labor Panel has appointed an emergency board from the panel to investigate a dispute between the Order of Railroad Telegraphers and the Chicago, Indianapolis & Louisville, the Delaware & Hudson, the Delaware, Lackawanna & Western, and the Norfolk Southern. The dispute arises out of the union's demand for payment by those roads of overtime rates to telegraphers working on Sundays and holidays.

The panel board appointed recently to investigate the dispute between the Norfolk Southern and its employees represented by the Brotherhood of Railway Clerks has reported that it settled the controversy in mediation proceedings. The dispute involved the brotherhood's demand for time-and-one-half pay for work in excess of eight hours per day and for Sunday and holiday work; and the settlement meets the demand.

Equipment on Order

Class I railroads on July 1 had 39,437 new freight cars on order, according to the Association of American Railroads. On the same date last year, they had 29,402 on order. This year's July 1 total included 10,737 hopper, including 2,827 covered hoppers; 4,687 gondolas, 1163 flat, 12,568 plain box, 6452 automobile, 3,730 refrigerator and 100 miscellaneous freight cars.

The Class I roads also had 615 locomotives on order on July 1, compared with 508 on the same day in 1945. The former total included 86 steam, six electric and 523 Diesel-electric locomotives compared with 111 steam, two electric and 395 Diesel-electrics one year ago.

Class I railroads put 18,256 new freight cars in service in the first half of 1946 compared with 21,948 in the same period last year. Those installed this year included 7,539 hopper, including 1,659 covered hoppers; 2,779 gondolas, 197 refrigerator, 55 flat, 1,251 automobile box and 6,435 plain box freight cars.

They also put 180 new locomotives in service in the first six months, of which 56 were steam, and 124 were Diesel-electrics. New locomotives installed in the same period last year totaled 315, of which 52 were steam, and 263 were Diesel-electrics.

Monon to Speed Trains

Train service between Chicago and Indianapolis, Ind., and between Chicago and Louisville, Ky., via the Chicago, Indianapolis & Louisville, will be materially improved beginning July 21. On that date the present "Hoosier" train service to Indianapolis will be doubled by the inauguration of a new, fast train to be known as the "Afternoon Hoosier," southward and the "Morning Hoosier" northward. This train will depart from Chicago at 5 p.m., daily, and arrive in Indianapolis at 9 p.m., while in the opposite direction it will leave Indianapolis at 8 a.m., with the arrival in Chicago set for 12:30 p.m. The "Morning Hoosier" from Chicago will depart at 7:30 a.m. daily and arrive in Indianapolis at 12:15 p.m., and the "Afternoon Hoosier" northbound will leave the latter city at 5:15 p.m., arriving in Chicago 4 hours later. Local stops will be made only by the "Morning Hoosiers." Equipment of these trains

will consist of air-condition coaches, dining cars and parlor cars.

The Chicago-Louisville service of the Monon will also be improved at this time by operating it independently of the Chicago-Indianapolis trains between Chicago and Monon, Ind. Under the new schedule the Louisville train will leave Chicago at 8:45 a.m. daily, 45 min. later than at present, and arrive in Louisville at 5:50 p.m., 10 min. earlier. Northbound the train will depart at 8:40 a.m., 1 hr. 35 min. earlier, and arrive at 5:45 p.m., 2 hr. 45 min. earlier. Air-conditioned coaches, dining car and parlor-lounge cars will be operated on these trains.

Richard Willis, Outstanding Yard Designer, Honored

In tribute to R. W. Willis, recently appointed assistant chief engineer of the Burlington lines, the large car-retarder-equipped classification yard of the Chicago, Burlington & Quincy at Galesburg, Ill., which was redesigned and enlarged under the direction of Mr. Willis in 1942, has been renamed "Willis Yard". In a ceremony which took place July 10 at the general yard office at Galesburg, a new name board was unveiled in the presence of more than 40 Burlington system and regional officers assembled for the occasion, including Ralph Budd, president; E. Flynn, executive vice-president; H. C. Murphy, vice-president, operation; J. H. Aydelott, general manager Lines East of Missouri river; and H. R. Clarke, chief engineer, system.

At a dinner forming a part of the program, with Mr. Murphy presiding, Mr. Willis, who has been with the engineering department of the Burlington for 47 years, was eulogized for his "outstanding ability and excellent judgment as a civil engineer, keen analysis of new projects, familiarity with the entire line, close cooperation with operating officers, and specialized knowledge of yard and terminal problems, which have made his services of inestimable value to the railroad." In response to remarks by Mr. Budd and others, Mr. Willis laid the basis of the success of his efforts over the years largely to the close cooperation which he has always received from and through the management of the Burlington and officers of the operating and engineering departments.

The enlargement and rearrangement of the Willis yard, the largest on the Burlington, to include additional and longer tracks, a retarder-equipped westbound hump, power-operated switches and modern signal and communication systems, was described in the *Railway Age* of March 6, 1943.

Johnson, King Praise Shippers' Car-Efficiency Activities

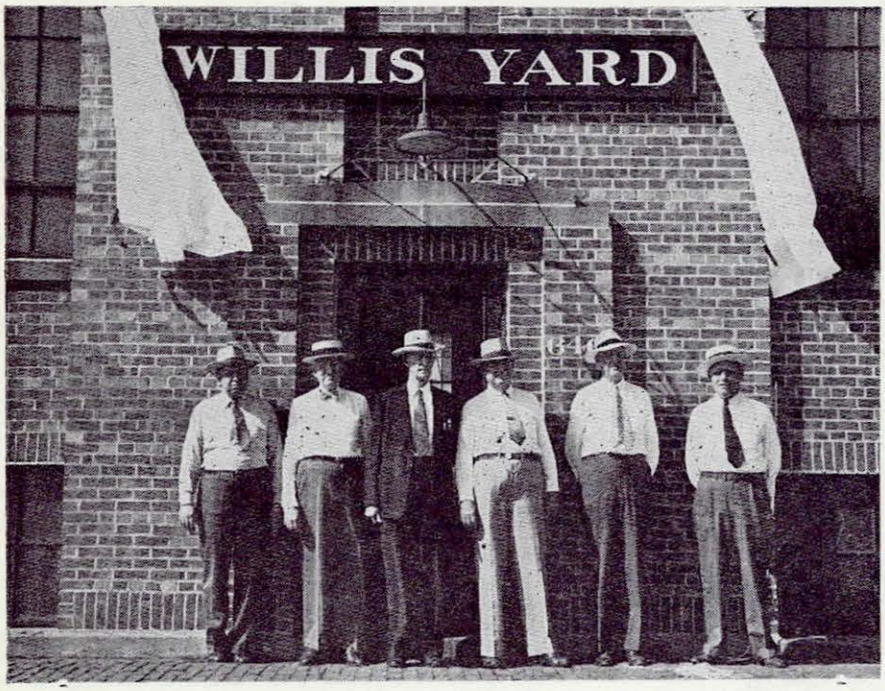
Letters of commendation have been sent by J. Monroe Johnson, director of the Office of Defense Transportation, and Homer C. King, deputy director, to the Mid-West Shippers Advisory Board, Chicago, and the Elmira, N. Y., Freight Car Efficiency Committee, praising those agencies for their concerted efforts in attempting to thwart the current and pending shortage of freight cars.

"I am impressed with your suggestions to load all cars to capacity, to hold no cars for prospective loading, to consolidate shipments, to unload cars promptly, to make cars available by unloading on Sundays and holidays and to analyze routing in order to reduce car delays," Colonel Johnson told A. H. Schwietert, general manager of the Chicago board.

"In your printed bulletin, you point out that this is not a case of helping the railroads at shippers' expense, but is a case of self-preservation for the users of cars. That reason in itself should be sufficient for every shipper to follow your plan and undertake to make the most effective use of the available car supply," Colonel Johnson added. "Extra efforts on the part of the railroads also are necessary. Unless we obtain the greatest possible utilization of our car supply by the railroads and shippers, our situation will remain highly difficult for some time to come. On the other hand, if we can obtain prompter movements by railroads and the cooperation from shippers which you are urging, the situation is far from hopeless."

In his communication to the Elmira agency, Mr. King declared that the car situation is more serious now than it ever was during war time.

"I believe one of the greatest ways of improving this situation would be for the war efficiency committees to give it their renewed and vigilant attention," he said. "That would do as much as any other single thing to improve car efficiency and provide essential transportation for the nation. Without that and improved performance on the railroads, I am certain that we will have a more serious general car shortage than now exists. On the other hand, if there is a renewal on the efforts of the car efficiency committees, plus an intensive campaign on the part of the railroads to improve their efficiency, the situation is far from hopeless."



New sign unveiled in renaming Galesburg (Ill.) yard on the Burlington. Left to right—H. C. Murphy, vice-president, operation; Ralph Budd, president; R. W. Willis, assistant chief engineer, in whose honor the yard was renamed; E. Flynn, executive vice-president; J. H. Aydelott, general manager, Lines East of Missouri River; and Ralph Johnson, mayor of Galesburg

Executives Emphasize Necessity for Rate Consultation

Consultation and conference between and among railroads are necessary in determining rates, particularly joint rates, R. T. Etheridge, freight traffic manager of the Seaboard Air Line, told United States Supreme Court Special Master Lloyd K. Garrison on July 10 in the state of Georgia's suit against southern and eastern railroads. Mr. Etheridge said that he finds it "impossible to devise, or indeed to imagine, an adequate substitute for the existing conference method of railroad rate-making."

If the present rate-making procedure were prohibited, Mr. Etheridge said, he, as a traffic officer of the Seaboard Air Line, "would not be able to arrive at rates with any degree of exactness which would meet all of the necessary requirements and conform to proper standards."

If the railroads in the public interest are to live up to the obligations imposed on them by the Interstate Commerce Act, Walter S. Franklin, vice-president-traffic of the Pennsylvania, testified on July 16, it is absolutely necessary when rate changes are considered for a railroad to learn in advance the attitude and views of shippers and other railroads, and the only means of gaining that information is by conferring with shippers and other railroads. Mr. Franklin, the first witness to testify for the northern roads, pointed out that in addition to their legal responsibilities when instituting rate changes, the railroads also must seek to avoid a vast mass of controversial litigation that would certainly delay and might destroy the usefulness of any

tive July 12, 1945; between the New York Central and Merchants Despatch Transportation Corporation and City Ice, effective January 1, 1946; between N. Y. C. and M. D. T. and City Ice and Empire Ice Company, effective January 1, 1946; and between the Staten Island Rapid Transit and the Fruit Growers Express Company, effective May 1, 1946.

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Emergency Boards

President Truman has created an emergency board to investigate a dispute which had brought to the Denver & Rio Grande Western a strike threat from its employees represented by the Brotherhood of Railroad Trainmen. The dispute involves about 30 grievance cases that under normal procedures would have gone to the National Railroad Adjustment Board.

Chairman H. H. Schwartz of the National Railway Labor Panel has appointed an emergency board from the panel to investigate a dispute between the Order of Railroad Telegraphers and the Chicago, Indianapolis & Louisville, the Delaware & Hudson, the Delaware, Lackawanna & Western, and the Norfolk Southern. The dispute arises out of the union's demand for payment by those roads of overtime rates to telegraphers working on Sundays and holidays.

The panel board appointed recently to investigate the dispute between the Norfolk Southern and its employees represented by the Brotherhood of Railway Clerks has reported that it settled the controversy in mediation proceedings. The dispute involved the brotherhood's demand for time-and-one-half pay for work in excess of eight hours per day and for Sunday and holiday work; and the settlement meets the demand.

Equipment on Order

Class I railroads on July 1 had 39,437 new freight cars on order, according to the Association of American Railroads. On the same date last year, they had 29,402 on order. This year's July 1 total included 10,737 hopper, including 2,827 covered hoppers; 4,687 gondolas, 1163 flat, 12,568 plain box, 6452 automobile, 3,730 refrigerator and 100 miscellaneous freight cars.

The Class I roads also had 615 locomotives on order on July 1, compared with 508 on the same day in 1945. The former total included 86 steam, six electric and 523 Diesel-electric locomotives compared with 111 steam, two electric and 395 Diesel-electrics one year ago.

Class I railroads put 18,256 new freight cars in service in the first half of 1946 compared with 21,948 in the same period last year. Those installed this year included 7,539 hopper, including 1,659 covered hoppers; 2,779 gondolas, 197 refrigerator, 55 flat, 1,251 automobile box and 6,435 plain box freight cars.

They also put 180 new locomotives in service in the first six months, of which 56 were steam, and 124 were Diesel-electrics. New locomotives installed in the same period last year totaled 315, of which 52 were steam, and 263 were Diesel-electrics.

Monon to Speed Trains

Train service between Chicago and Indianapolis, Ind., and between Chicago and Louisville, Ky., via the Chicago, Indianapolis & Louisville, will be materially improved beginning July 21. On that date the present "Hoosier" train service to Indianapolis will be doubled by the inauguration of a new, fast train to be known as the "Afternoon Hoosier," southward and the "Morning Hoosier" northward. This train will depart from Chicago at 5 p.m., daily, and arrive in Indianapolis at 9 p.m., while in the opposite direction it will leave Indianapolis at 8 a.m., with the arrival in Chicago set for 12:30 p.m. The "Morning Hoosier" from Chicago will depart at 7:30 a.m. daily and arrive in Indianapolis at 12:15 p.m., and the "Afternoon Hoosier" northbound will leave the latter city at 5:15 p.m., arriving in Chicago 4 hours later. Local stops will be made only by the "Morning Hoosiers." Equipment of these trains

will consist of air-condition coaches, dining cars and parlor cars.

The Chicago-Louisville service of the Monon will also be improved at this time by operating it independently of the Chicago-Indianapolis trains between Chicago and Monon, Ind. Under the new schedule the Louisville train will leave Chicago at 8:45 a.m. daily, 45 min. later than at present, and arrive in Louisville at 5:50 p.m., 10 min. earlier. Northbound the train will depart at 8:40 a.m., 1 hr. 35 min. earlier, and arrive at 5:45 p.m., 2 hr. 45 min. earlier. Air-conditioned coaches, dining car and parlor-lounge cars will be operated on these trains.

Richard Willis, Outstanding Yard Designer, Honored

In tribute to R. W. Willis, recently appointed assistant chief engineer of the Burlington lines, the large car-retarder-equipped classification yard of the Chicago, Burlington & Quincy at Galesburg, Ill., which was redesigned and enlarged under the direction of Mr. Willis in 1942, has been renamed "Willis Yard". In a ceremony which took place July 10 at the general yard office at Galesburg, a new name board was unveiled in the presence of more than 40 Burlington system and regional officers assembled for the occasion, including Ralph Budd, president; E. Flynn, executive vice-president; H. C. Murphy, vice-president, operation; J. H. Aydelott, general manager Lines East of Missouri river; and H. R. Clarke, chief engineer, system.

At a dinner forming a part of the program, with Mr. Murphy presiding, Mr. Willis, who has been with the engineering department of the Burlington for 47 years, was eulogized for his "outstanding ability and excellent judgment as a civil engineer, keen analysis of new projects, familiarity with the entire line, close cooperation with operating officers, and specialized knowledge of yard and terminal problems, which have made his services of inestimable value to the railroad." In response to remarks by Mr. Budd and others, Mr. Willis laid the basis of the success of his efforts over the years largely to the close cooperation which he has always received from and through the management of the Burlington and officers of the operating and engineering departments.

The enlargement and rearrangement of the Willis yard, the largest on the Burlington, to include additional and longer tracks, a retarder-equipped westbound hump, power-operated switches and modern signal and communication systems, was described in the *Railway Age* of March 6, 1943.

Johnson, King Praise Shippers' Car-Efficiency Activities

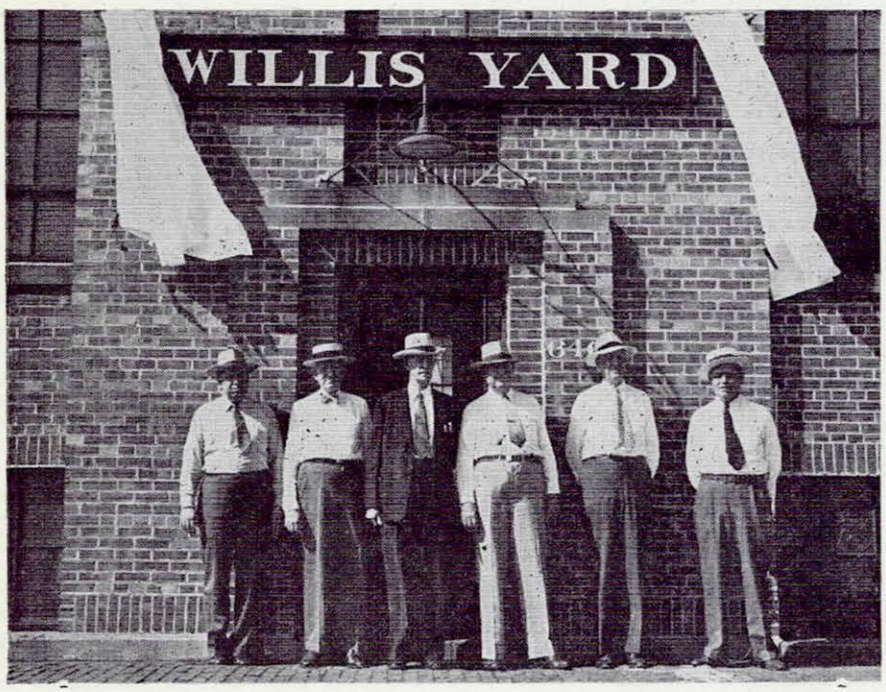
Letters of commendation have been sent by J. Monroe Johnson, director of the Office of Defense Transportation, and Homer C. King, deputy director, to the Mid-West Shippers Advisory Board, Chicago, and the Elmira, N. Y., Freight Car Efficiency Committee, praising those agencies for their concerted efforts in attempting to thwart the current and pending shortage of freight cars.

"I am impressed with your suggestions to load all cars to capacity, to hold no cars for prospective loading, to consolidate shipments, to unload cars promptly, to make cars available by unloading on Sundays and holidays and to analyze routing in order to reduce car delays," Colonel Johnson told A. H. Schwietert, general manager of the Chicago board.

"In your printed bulletin, you point out that this is not a case of helping the railroads at shippers' expense, but is a case of self-preservation for the users of cars. That reason in itself should be sufficient for every shipper to follow your plan and undertake to make the most effective use of the available car supply," Colonel Johnson added. "Extra efforts on the part of the railroads also are necessary. Unless we obtain the greatest possible utilization of our car supply by the railroads and shippers, our situation will remain highly difficult for some time to come. On the other hand, if we can obtain prompter movements by railroads and the cooperation from shippers which you are urging, the situation is far from hopeless."

In his communication to the Elmira agency, Mr. King declared that the car situation is more serious now than it ever was during war time.

"I believe one of the greatest ways of improving this situation would be for the war efficiency committees to give it their renewed and vigilant attention," he said. "That would do as much as any other single thing to improve car efficiency and provide essential transportation for the nation. Without that and improved performance on the railroads, I am certain that we will have a more serious general car shortage than now exists. On the other hand, if there is a renewal on the efforts of the car efficiency committees, plus an intensive campaign on the part of the railroads to improve their efficiency, the situation is far from hopeless."



New sign unveiled in renaming Galesburg (Ill.) yard on the Burlington. Left to right—H. C. Murphy, vice-president, operation; Ralph Budd, president; R. W. Willis, assistant chief engineer, in whose honor the yard was renamed; E. Flynn, executive vice-president; J. H. Aydelott, general manager, Lines East of Missouri River; and Ralph Johnson, mayor of Galesburg

Executives Emphasize Necessity for Rate Consultation

Consultation and conference between and among railroads are necessary in determining rates, particularly joint rates, R. T. Etheridge, freight traffic manager of the Seaboard Air Line, told United States Supreme Court Special Master Lloyd K. Garrison on July 10 in the state of Georgia's suit against southern and eastern railroads. Mr. Etheridge said that he finds it "impossible to devise, or indeed to imagine, an adequate substitute for the existing conference method of railroad rate-making."

If the present rate-making procedure were prohibited, Mr. Etheridge said, he, as a traffic officer of the Seaboard Air Line, "would not be able to arrive at rates with any degree of exactness which would meet all of the necessary requirements and conform to proper standards."

If the railroads in the public interest are to live up to the obligations imposed on them by the Interstate Commerce Act, Walter S. Franklin, vice-president-traffic of the Pennsylvania, testified on July 16, it is absolutely necessary when rate changes are considered for a railroad to learn in advance the attitude and views of shippers and other railroads, and the only means of gaining that information is by conferring with shippers and other railroads. Mr. Franklin, the first witness to testify for the northern roads, pointed out that in addition to their legal responsibilities when instituting rate changes, the railroads also must seek to avoid a vast mass of controversial litigation that would certainly delay and might destroy the usefulness of any

proposed rate change. He added that the only means by which these two obligations could be met, is by the conference method of rate-making, which is being attacked by Georgia.

"Without the conference procedure, a manufacturer attempting to market a product nationally, would have to spend months, and perhaps years, to obtain a nation-wide freight rate adjustment," Mr. Franklin said. "A large industrial concern could probably accomplish the result by maintaining large legal and traffic staffs, but the only way a small shipper can effectuate a broad readjustment in rates is through the conference method or through the Interstate Commerce Commission or the state commissions, and certainly it takes far less time to handle an adjustment through conference than through litigated proceedings before the commissions."

Karl G. Gottschaldt, traffic manager of the Gulf, Mobile & Ohio, told Mr. Garrison, on the same day, that the development of the natural resources of the South has been striking in recent years and the railroads have greatly aided in this. Pointing out that plants in southern territory which depend upon forest products are operating to capacity and that practically all of them are expanding and making their plans for permanent operation, Mr. Gottschaldt denied emphatically that this development has been hampered or retarded in any way by existing freight rates. Neither has the extensive oil development in this section been suppressed or slowed down by freight rates, he said.

Colonel Johnson Urges Freight Unloadings on Saturdays

Declaring that the car supply situation is becoming more critical now than at any time during the war, Colonel J. Monroe Johnson, director, Office of Transportation, last week urged freight receivers to make immediate provisions to accept and unload inbound shipments on Saturdays. According to Colonel Johnson's statement, freight traffic of all kinds, particularly box car traffic, is showing heavy increases while at the same time the number of available cars is steadily decreasing as a result of over-age and heavy usage during the war.

The O. D. T. director pointed out that since lumber, steel and other materials continue in short supply, not enough cars are being built even to maintain replacements for those going out of service. He added that figures on bad order cars and cars out of service and awaiting repairs, also continue to mount to new high levels.

His statement also emphasized that during the peak freight traffic months of September and October the nation will be faced with a more serious shortage of equipment than it experienced throughout the war. Meanwhile, the O. D. T., referring to the tightening box car situation, revealed that at the present time 1,000 box cars per day are needed for the movement of freight in central, western and southwestern regions and that the Interstate Commerce Commission's diversion agent (Chairman Warren C. Kendall of the Car Service Division, Association of American Railroads) recently has issued orders requiring that about 850 box cars be delivered daily from the eastern and Alleghany regions through western gateways, in addition to ordering 150 cars to be moved daily into the critical area from roads west of the Mississippi river.

"The cooperation of freight receivers is needed to maintain a free flow of box cars to the grain region," Colonel Johnson reported. "However, the custom of Saturday closing of industries and mercantile concerns has become so general that the congestion of freight houses and delivery platforms is seriously retarding freight delivery services and freight car turn-around.

"The movement of wheat for export and home consumption and the transportation of raw materials and equipment needed in the reconversion period cannot be maintained unless the fullest possible use is made of the nation's rail and motor facilities. Many thousands of car-days are lost every week-end because inbound freight not unloaded on Saturdays is creating backlogs which cannot be worked off until well into the middle of the following week."

Continuing, the statement said that O. D. T. studies show how box car loadings have been climbing steadily and are exceeding the highest war-time figures. The trend has been upward since V-J Day; box car loadings for the week ended August 11, 1945, amounted to 368,273 and for the week ended June 29, 1946, loadings amounted to 392,580 box cars, an increase of 24,307 or 6.6 per cent over the week prior to V-J Day. Refrigerator car loadings also were reported at "top figures."

It was further pointed out that while the demand for box cars has been increasing, the supply of serviceable cars has decreased from 723,440 as of April 23, 1945, to less than 690,000 at the present time, a loss of over 33,000 box cars. Throughout most of the war, the statement went on, the percentage of box cars awaiting repairs was kept below three per cent but has since increased to 4.6 per cent, or 33,519 cars. It added that out of approximately 1,770,000 freight cars of all kinds on American roads, it is estimated that more than 300,000 have passed the point at which they normally would have been retired from service.

Douglass N. M. B. Chairman

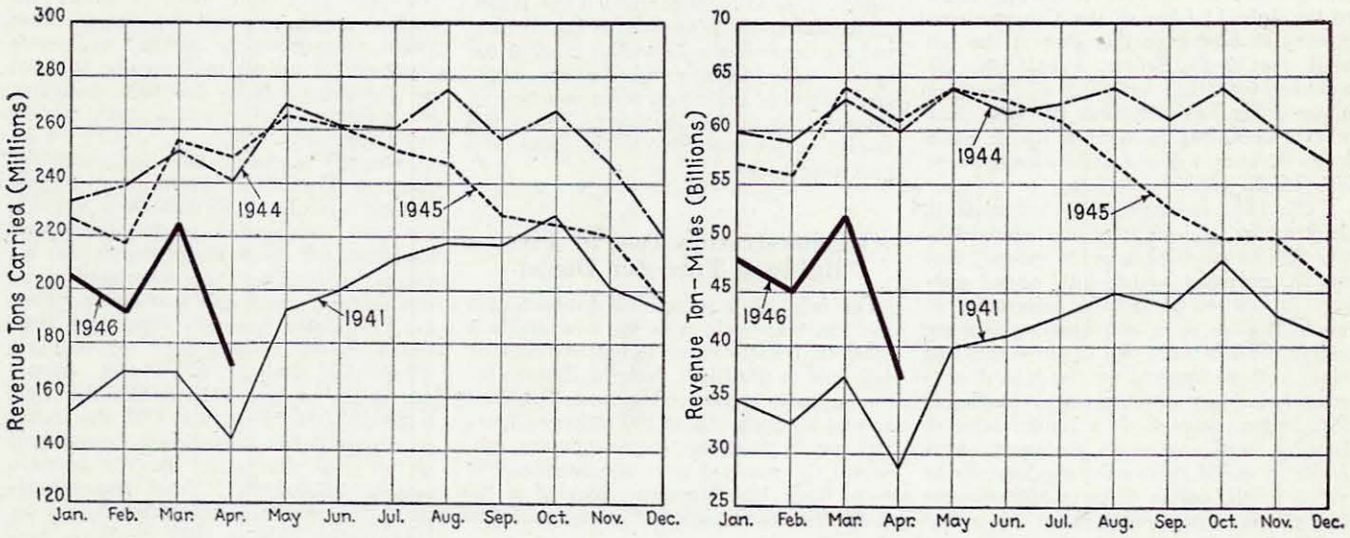
Frank P. Douglass has been elected chairman of the National Mediation Board, effective July 1. He succeeds Harry A. Schwartz, who continues as a member of N. M. B. and chairman of the National Railway Labor Panel.

Users Conference Sponsoring Highway Transport Congress

The National Highway Users Conference is sponsoring the "first annual highway transportation congress" to be held in Washington, D. C., September 26 and 27. The brief preliminary announcement said that "the state and national highway users organizations will advance programs for post-war development" at the meeting.

Freight Car Loadings

Loadings of revenue freight for the week ended July 13 totaled 895,080 cars, the Association of American Railroads announced on July 18. This was an increase of 215,295 cars, or 31.7 per cent, above the preceding week, which included the July 4 holiday, an increase of 11,537 cars, or 1.3 per cent, over the corresponding week last



Revenue Tons and Revenue Ton-Miles—1946 Compared with 1941, 1944 and 1945

year, and a decrease of 8,821 cars, or 1.0 per cent, below the comparable 1944 week.

Loading of revenue freight for the week ended July 6 totaled 679,785 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, July 6

District	1946	1945	1944
Eastern	127,071	132,286	131,549
Allegheny	145,969	159,855	167,460
Pocahontas	31,800	35,952	39,608
Southern	102,386	103,509	100,811
Northwestern	104,453	110,155	112,415
Central Western	109,533	117,227	121,682
Southwestern	58,573	67,679	70,822
Total Western Districts	272,559	295,061	304,919
Total All Roads	679,785	726,663	744,347
Commodities:			
Grain and grain products	46,472	54,932	57,120
Livestock	13,736	10,895	11,322
Coal	99,828	117,990	123,962
Coke	11,706	13,255	13,682
Forest products	32,784	31,588	33,253
Ore	63,024	69,743	75,146
Merchandise l.c.l.	108,350	93,481	91,108
Miscellaneous	303,885	334,779	338,754
July 6	679,785	726,665	744,347
June 29	879,545	893,947	897,210
June 22	858,437	876,705	880,311
June 15	867,918	873,522	877,493
June 8	830,126	884,658	873,174
Cumulative total, 27 weeks	19,695,874	22,005,209	22,029,548

In Canada.—Carloadings for the week ended July 6 totaled 60,623 cars, as compared with 70,060 cars for the previous week, and 63,263 cars for the corresponding week last year, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
July 6, 1946	60,623	30,715
July 7, 1945	63,263	34,642
Cumulative Totals for Canada:		
July 6, 1946	1,793,118	913,350
July 7, 1945	1,834,473	997,871

Crosser Security Bill Reported to Senate

(*Continued from page 100*)

any important relation to rail transportation."

Mr. Lea made this assertion in a statement which he inserted in the appendix to the July 13 issue of the Congressional Record to take a parting shot at the bill as it went to the Senate. People who are apprehensive about activities of "pressure groups," Mr. Lea said, "may well have their fears accentuated by what is taking place in the treatment of the railroad retirement bill, H. R. 1362."

"This bill," he went on, "is substantially defective in its legislative and administrative provisions. It proposes to extend benefits for purposes having little or no warrant in our social security programs. It would impose upon employers who come within the bill taxes two or three times as high as those imposed by the federal government on any other class of employers for similar purposes. If a similar scale of benefits were applied to the nation generally, it would impose burdens beyond the ability of the nation to carry and preserve our system of free enterprise.

"The interstate and foreign commerce committee of the House sought to eliminate these objectionable features. We proposed the adoption of a substitute bill which would have extended the benefits under the present Railroad Retirement Act by more than $65,000,000 per year above present benefits, but without the extreme provisions carried in H. R. 1362.

"When the railroad retirement bill came before the Congress on the 3rd of July, amendments were offered in conformity with those proposed by the committee substitute. Every amendment so offered was approved by the committee of the whole by a decisive majority. When the matter came before the House on a roll call vote, 144 members did not vote. Of the remaining 288 members, 108 voted for the amendments and 180 against the amendments. Thereupon, H. R. 1362 was adopted as originally filed without the slightest amendment to improve its great defects.

"I think it inconceivable that the House would have taken such action on such a measure had there been no pressure groups involved. . . .

"What we do now as to railroad employees will be far reaching as a precedent for burdens and responsibilities that must be assumed by industries and their employees of the nation generally.

"Democratic government is the negation of class government at any level. Equal rights to all and special privileges to none are goals of democratic government. Special privilege legislation in any form is based on advantages to the few at the expense of the many. . . .

"When the adoption of our Constitution was under consideration, a fear of the influence of special groups was suggested. The view seemed to be accepted that special privileges granted under the pressure of group action would not be tolerated because the burden of such privileges would fall upon the great majority of the people who would suffer the burden of such special privileges. In other words, it was thought the victims of special privileges would furnish a resistance that would protect the public against special group legislation.

"There are just three barriers under the federal government on which the public must depend for its protection against unjust or oppressive legislation from any source. One of these barriers is the House of Representatives, another is the Senate, and the other is the Executive head of the nation. For their protection the unorganized public must look to us members of Congress or to the President. If we fail to give proper protection to the public, the government fails."

Demonstration Test of First Baldwin Transfer Diesel

On July 10, a successful demonstration test run was made with the new Baldwin 2,000-hp. Diesel-electric locomotive recently delivered to the Elgin, Joliet & Eastern for road transfer service on the Outer Belt Line around Chicago. About 100 railway officers and supply company representatives witnessed the test and were accommodated in three Rock Island coaches, coupled in between the rear freight car on the train and two cabooses.

Following an inspection of the locomotive at Gary, Ind., the test was conducted over the line of the E. J. & E. to Joliet, Ill., a distance of 47 miles with 0.33 per cent ruling grade. The consist and weight of the train were as follows: 63 freight cars, 4,284 tons; 3 coaches, 210 tons; 2 cabooses, 36 tons; total train weight exclusive of the locomotive, 4,530 tons. The locomotive handled the train smoothly during this test and without incident except a short delay to set out a freight car which developed a hot box.

In previous non-official tests, this locomotive handled 2,932 tons on a 1.0 per cent ruling grade for the 73 miles between Waukegan, Ill., and Joliet, and loads up to 6,000 tons on a 0.37 per cent ruling grade for the 13 miles between Hartsdale, Ind., and Gary. The fuel consumption in this service is 1.43 gal. of fuel oil per 1,000 gross ton-miles.

Questions Economics of Air Postage Cut

(*Continued from page 99*)

what the future policy of the department is to be regarding the transportation of first-class mail.

"In 1923 when we purchased a number of steel 60-ft. R. P. O. cars the cost per car was approximately $23,000. The new streamlined cars we are now proposing to build will cost between $45,000 and $55,000. Naturally the railroads will hesitate to contract for a class of equipment on the current day costs if there is serious doubt that there will be need for such equipment shortly after it is delivered."

"It has not been, and is not now, the policy of the railroads to intrude themselves upon the Post Office Department's responsibilities in the matter of fixing rates or charges for its services to the public," Mr. Schardt already had explained. "If there is any justification for my presence here today it must rest upon our concern over the many inquiries indicating that much confusion has been created in the minds of persons interested as to the cost of transporting and handling U. S. Mail by commercial air lines, as compared with the cost for similar services by the railroads. . . . In the aim to create in the public mind the comforting feeling that it costs but very little more to handle the mail by air than by rail and that the Post Office Department is making a sizeable profit out of the air mail service, some of the publicity probably has been motivated by a greater degree of zeal than caution for accuracy. . . .

"Recently statements have been publicized that the Post Office Department is now making a profit of $50,000,000 a year on air mail. According to the latest cost ascertainment report of the department the excess of revenues over expenditures on this servic is about half that figure. Page 17, Postmaster General's report for 1944, shows excess revenue over expenditures for air mail, domestic, $24,491,000. Adding air mail—foreign, $11,566,000, the total is $36,057,000. Even for 1945 the excess of revenues over apportioned expenditures on air mail (domestic) is only approximately $31,000,000. Total expenditures of the Post Office Department for air mail service 1930 to 1945, inclusive, were $430,124,779. Total air mail revenue for

the same period was $389,096,394. Net deficit was $41,028,385.

Ton-Mile Costs—"Very wide publicity has been given through aviation journals to the statement that it costs 28 cents per ton-mile to carry first class mail by rail. The Post Office Department's 1944 cost ascertainment report definitely shows that to be an erroneous and misleading statement. In 1944 the railroads were paid $129,597,956 for the transportation of 1,973,010,759 ton-miles of all classes of mail matter and this payment included the space and the distribution facilities in R. P. O. cars. Even if you allow the cost for R. P. O. space and facilities to remain in the total payments to the railroads, you will find by dividing the ton-miles into the total payment to the railroads the rate per ton-mile would be 6.57 cents. . . .

"The railroads handled approximately 92 per cent of the total weight of non-local first class mail but received seven and a half million dollars less than the air lines received for carrying about 8 per cent of the total weight. The railroads are paid 39 cents a car-mile for a 60-ft. railway post office car which affords distributing equipment and comfort facilities for the postal clerks traveling in them. These cars carry an average load ranging from five to seven tons of mail consisting of first class mail, registered mail, third class mail, newspapers, special handling parcels and some ordinary parcels. R. P. O. cars are operated principally for first class mail and assuming that they carry only an average load of 3½ tons of first class mail, then the rail transportation rate is about 3 cents per ton-mile—and not 28 cents per ton-mile as erroneously publicized. . . . It is a fact not fully realized that as the railroads are paid on a space basis instead of a weight basis and as first class mail is of a greater density than other mail, it is actually transported at a lower rate of transportation cost than other less urgent and lighter classes of mail.

"A comparison of 1944 with 1941 will show the tremendous impact of World War II on both first class mail and air mail. Even in these war-inflated years when the demand for super-speed was greatest, first class mail increased by over four and a half billion pieces and over 90 million pounds, while during the same period, air mail increased slightly less than 700 million pieces and 19 million pounds, the ratio of increase being approximately six first class letters to one air letter or five pounds of first class mail to one pound of air mail. If this may be taken as indicative of the relative use made of air mail service as compared with ordinary non-surcharged service even in the super-speed period of the war, it must be assumed that the department's assumption of an extraordinary increase in air mail volume under a five-cent rate is rather too optimistic."

June Employment

Railroad employment increased 1.72 per cent—from 1,307,251 to 1,329,724—during the one-month period from mid-May to mid-June, but the mid-June total was 8.56 per cent below the total for June, 1945, according to the preliminary summary prepared by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The index number, based on the 1935-39 average, was 128.5 for June, as compared with 128.6 for the previous month and 140.6 for June, 1945.

June employment was above that of the corresponding 1945 month in two groups, the increases being 0.01 per cent in executives, officials and staff assistants and 1.3 per cent in transportation, other than train, engine and yard. The declines ranged from 4.01 per cent in the professional, clerical and general group to 19.3 per cent in maintenance of way and structures group.

As compared with the previous month, there was a decline in June in only one group—executives, officials and staff assistants — where the decrease was 0.21 per cent. Increases ranged from 0.06 per cent in professional, clerical and general group to 4.98 per cent in train and engine service.

O. D. T. to Operate Great Lakes Towing Company

Termination of an operating agreement between the Office of Defense Transportation and the Great Lakes Towing Company of Cleveland, Ohio, became effective July 19, and O. D. T. hereafter will operate the company's transportation system in behalf of the government.

The O. D. T. assumed possession and control of the towing company's property on November 29, 1945, under a Presidential seizure order following a labor dispute. At that time, O. D. T. entered into an agreement whereby the towing company operated and managed the service and assumed full financial responsibility under O. D. T. federal manager Laurence C. Turner.

O. D. T. said its termination of the operating agreement was a result of a National Wage Stabilization Board order issued on May 29 calling for increases of $1.53 a day and arbitration of the dispute which led to O. D. T. seizure of the property. Mr. Turner will continue as federal manager.

Will Hear Complaint Against M. P. and Frisco Trustees

The Interstate Commerce Commission will hold public hearings on the recent complaint wherein the Alleghany Corporation asked it to enter upon an investigation to determine whether Guy A. Thompson, trustee of the Missouri Pacific, and Frank A. Thompson, trustee of the St. Louis-San Francisco, "have violated or are violating" section 5 of the Interstate Commerce Act which relates to combinations and consolidations of carriers. This was revealed last week when the commission made public a July 3 order of its Division 4 which assigned the case (docketed as No. 20533) for hearing in Washington, D. C., before Assistant Director C. E. Boles of the Bureau of Finance "at a time hereafter to be determined."

As noted in the *Railway Age* of May 18, page 1043, the Alleghany complaint identified the Thompsons as brothers who are both members of the same St. Louis, Mo., law firm; and it went on to allege among other things that they "are now managing and controlling" the M. P. and Frisco "in a common interest in violation of section 5(4) of the act." The commission's July 3 order denied a motion whereby the defendants sought an order requiring the complainant to make the complaint "more definite and certain," or an order dismissing the complaint in the event of complainant's refusal or failure to do so. At the same time the commission extended until 20 days after the date of service of the present order the period within which the defendants may answer the complaint.

Better Service For Sportsmen Planned By North Western

Anticipating a record-breaking demand in 1947 for transportation into the famous North Woods resort area of Wisconsin, the Chicago & North Western has completed plans for the inauguration next year of a new, fast, daytime streamlined train between Chicago and Ashland, Wis., and Watersmeet, Mich. The new train, which will replace the North Western's "Flambeau," summer seasonal train, will be similar in equipment to the road's "400" fleet and will operate the year around. It will serve practically the same communities as the "Flambeau". Consisting of coaches, parlor cars, dining car and a tap-diner-lounge car, the train will operate on a faster running time than that of its predecessor and will run by way of Milwaukee, Wis., Green Bay and Monico.

Club Meetings

The Traffic Club of Pittsburgh, Pa., will hold its open invitation golf outing on Thursday, July 25, at the Pittsburgh Field Club. This is their first invitation golf outing since 1941. The program is in charge of A. J. Wyant, general freight agent, Akron, Canton & Youngstown. Arnold H. Farrar, freight traffic manager, Baltimore & Ohio, Pittsburgh, is president of the club and will preside at the dinner that evening.

The New York division of Railroad Enthusiasts will meet July 24 at 7:45 p. m. in room 5930, Grand Central Terminal. The Rock Island's color movie, "Colorado—Vacationland Supreme," will be shown.

The Southern Association of Car Service Officers will meet at the Henry Grady hotel, Atlanta, Ga., at 10 a. m., July 25. This will be a reorganization meeting of the association which has not convened in several years.

June Operating Revenues 25.4 Per Cent under 1945

From preliminary reports of 87 Class I roads representing 80.2 per cent of operating revenues, the Association of American Railroads has estimated that the June gross amounted to $491,030,662, a decrease of 25.4 per cent below the $658,287,010 reported for the same 1945 month. Estimated June freight revenues were $366,002,129 compared with $486,936,290, a decrease of 24.8 per cent. Estimated passenger revenues were $87,299,736 compared with $123,626,791, a decrease of 29.4 per cent.

A list of Current Publications appears on page 121.

Equipment and Supplies

LOCOMOTIVES

The UTAH COPPER COMPANY has ordered seven 125-ton, 3,000-hp., 3,000-volt-D.C., electric locomotives from the General Electric Company.

The BELGIAN NATIONAL RAILWAYS are in need of Diesel-electric switching locomotives for make-up and yard operations, according to the "Foreign Commerce Weekly" of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce, which advised manufacturers to send full information regarding their products to the commercial attaché, American Embassy, Brussels.

FREIGHT CARS

The CENTRAL OF GEORGIA has ordered 200 50-ton pulp-wood cars from the Pullman-Standard Car Manufacturing Company. The inquiry for this equipment was reported in the *Railway Age* for June 29, page 1284.

The LOUISVILLE & NASHVILLE has ordered 1,250 50-ton hopper cars from the Pullman-Standard Car Manufacturing Company, 750 50-ton hopper cars from the American Car & Foundry Company and 1,000 50-ton box cars from the Pressed Steel Car Company.

The UNION PACIFIC has ordered 1,500 freight cars to be built at a cost of $7,900,000. The order was divided among three manufacturers as follows: 500 50-ton 40-ft. box cars from the Pullman-Standard Car Manufacturing Company, to cost $2,400,000; 500 50-ton 40-ft. box cars from the General American Transportation Company, to cost $2,400,000, and 500 50-ton 40-ft. automobile cars, each equipped with an automobile loading device, from the American Car & Foundry Co., at a cost of $3,100,000. The inquiry for this equipment was reported in the *Railway Age* for May 25, page 1080.

PASSENGER CARS

The DELAWARE, LACKAWANNA & WESTERN is inquiring for 15 coaches, 2 dining cars and 2 tavern-lounge cars.

Southern Plans to Streamline More Trains

The Southern has announced a program of modernization and improvement in its through passenger service which will involve re-equipping four trains (the "Crescent", the "Royal Palm", the "Southerner" and the "Tennesseean") with 147 new, lightweight, streamlined cars at an estimated cost of more than $15,000,000. As these trains are operated in part over the tracks of other lines, including the Atlanta & West Point, the Florida East Coast, the Louisville & Nashville, the New York Central and the Pennsylvania, as well as those of the Southern, the other roads will participate on a mileage basis in the buying of the equipment, of which the Southern's share will be 101 cars costing over $10,000,000.

The new equipment will include 59 all-room sleeping cars, 8 room-bar-lounge-observation cars, 4 room-bar-lounge cars, 13 diners, 35 coaches, 4 lounge-cafe-coaches, 6 lounge-bar-coaches, 4 baggage-coaches, 4 baggage-dormitory cars and 10 post office cars.

Ernest E. Norris, president of the Southern, said the program reflects that road's desire to proceed as rapidly as possible with its extensive service betterment plans which were interrupted by the war. "We want to give our customers the finest service possible," he continued, "but it takes money to do that. With our present inadequate rates, and greatly increased wage, fuel and other costs, it is impossible even to make ends meet. Thus, we are looking hopefully to the Interstate Commerce Commission for an early and favorable decision on the railroads' petition for a 25 per cent increase in freight rates. On that decision will depend how far and how fast we can progress our improvement program, if at all."

Forty-nine of the new cars—enough for four trains—will be assigned to the "Crescent", which operates between New York and Washington, D. C., over the Pennsylvania, between Washington and Atlanta, Ga., over the Southern, between Atlanta and Montgomery, Ala., over the Atlanta & West Point and between Montgomery and New Orleans, La., over the Louisville & Nashville. Twenty-eight of the cars will be all-room sleeping cars, by means of which

(Continued on facing page)

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Railroad Equipment Ordered in First Six Months

Orders for 55,339 freight cars, 752 passenger cars, 298 steam locomotives, 514 Diesel-electric locomotives and one electric locomotive were received by United States equipment manufacturers in the first six months of 1946, according to reports received by *Railway Age*. Of the total of freight cars ordered, 38,167 were for export and 17,172 for domestic service; 13,558 of the latter were ordered by railroads, the rest by car lines and industries. Freight cars for domestic use ordered from contract builders totaled 9,792, while 7,380 were ordered from railway company shops.

The principal purchasers of steam locomotives from American builders in the first half of 1946 were foreign governments and foreign railroads, the export total being 254 compared to 44 steam locomotives bought by American railroads. Domestic orders for Diesel-electric types aggregated 277, while 88 were ordered for export. In addition, there were orders for 149 Diesel-electrics for unidentified purchasers.

Orders for Freight Cars for Service in the United States

First Six Months, 1946

Purchaser	No.	Class	Capacity	Month Ordered	Builder
Akron, Canton & Youngstown	25	Cov. Hopper	70-ton	April	Amer. Car & Fdy.
Allied Chemical & Dye Corp.	100	Tank	50-ton	January	Amer. Car & Fdy.
	100	Tank	50-ton	January	General American
American Locomotive Co.	1	Flat	50-ton	May	Amer. Car & Fdy.
American Refrigerator Transit*	250	Refrigerator	40-ton	April	Company Shops
American Rolling Mill Co.	9	Flat	125-ton	January	Pressed Steel
Ann Arbor	50	Box	50-ton	February	Wabash R.R. Shops
Ansul Chemical Co.	1	Tank	40-ton	April	General American
	1	Tank	40-ton	May	General American
Atchison, Topeka & Santa Fe	750	Box	50-ton	April	Pullman-Standard
	100	Caboose	....	April	R.R. Shops
	350	Refrigerator	40-ton	May	Pullman-Standard
Atlas Powder Co.	2	Tank	40-ton	June	General American
Baltimore & Ohio	500	Box	....	January	Harlan & Holl'sworth
Bangor & Aroostook	100	Rack	50-ton	April	Magor
Birmingham Slag Co.	10	Ore Car	70-ton	January	Pullman-Standard
Boston & Maine	20	Cov. Hopper	70-ton	January	Amer. Car & Fdy.
Buffalo Electro Chemical Co.	2	Tank	40-ton	February	Amer. Car & Fdy.
Godfrey L. Cabot	20	Cov. Hopper	50-ton	February	Amer. Car & Fdy.
California Dispatch Lines	15	Tank	50-ton	February	Amer. Car & Fdy.
	20	Tank	40-ton	March	Amer. Car & Fdy.
Cambria & Indiana	2	Air Dump	.	January	Pressed Steel
Central of Pennsylvania	125	Cement Hopper	70-ton	June	Harlan & Holl'sworth
Chesapeake & Ohio	50	Caboose	30-ton	February	Amer. Car & Fdy.
Chicago Great Western	10	Box	50-ton	March	R R. Shops
	25	Cov. Hopper	70-ton	April	Pullman-Standard
Chicago & Eastern Illinois	6	Caboose	....	April	Amer. Car & Fdy.
Chicago, Milwaukee, St. Paul & Pacific	750	Box	50-ton	March	R.R. Shops
	250	Auto	50-ton	March	R.R. Shops
Columbian Carbon Co.	10	Cov. Hopper	70-ton	March	Amer. Car & Fdy.
	10	Cov. Hopper	40-ton	June	Amer. Car & Fdy.
Columbus & Greenville	50	Gondola	50-ton	February	Amer. Car & Fdy.
Commodities Car Co.	5	Tank	40-ton	March	Amer. Car & Fdy.
Consolidated Chemical Industries	6	Tank	....	January	Amer. Car & Fdy.
	5	Tank	50-ton	May	General American
	3	Tank	50-ton	May	Amer. Car & Fdy.
Continental Carbon Co.†	20	Cov. Hopper	..	June	General American
Delaware, Lackawanna & Western	500	Hopper	50-ton	June	Bethlehem
	500	Hopper	50-ton	June	Amer. Car & Fdy.
	500	Box	50-ton	June	Magor
Delaware & Hudson	200	Hopper	.	March	R.R. Shops
	50	Cov. Hopper	50-ton	May	Greenville
Denver & Rio Grande Western	10	Caboose	. .	June	Pressed Steel
Detroit Chemical Works	2	Tank	50-ton	May	General American
Detroit & Mackinac	200	Box	50-ton	April	General American
	25	Gondola	50-ton	April	General American
Detroit & Toledo Shore Line	25	Cov. Hopper	70-ton	January	Harlan & Holl'sworth
Dewey Port'and Cement Co.	20	Cov. Hopper	70-ton	June	Amer. Car & Fdy.
Diamond Alkali Co.	4	Cov. Hopper	70-ton	April	Harlan & Holl'sworth
	7	Tank	40-ton	May	General American

Dow Chemical Co.	10	Tank	50-ton	February	Amer. Car & Fdy.
	20	Tank	70-ton	March	General American
Electro Metallurgical Co.	7	Cov. Hopper	70-ton	January	Amer. Car & Fdy.
Elgin, Joliet & Eastern	300	Gondola	50-ton	January	Amer. Car & Fdy.
	200	Flat	50-ton	January	Amer. Car & Fdy.
Fruit Growers Express*	150	Refrigerator	50-ton	April	R.R. Shops
General Electric Co.	3	Cov. Hopper	70-ton	March	Amer. Car & Fdy.
Grand Trunk Western	10	Air Dump	50-ton	June	Magor
Great Northern	25	Cov. Hopper	70-ton	April	Amer. Car & Fdy.
Gulf, Mobile & Ohio	50	Cov. Hopper	70-ton	February	Pullman-Standard
	1,000	Box	50-ton	April	Amer. Car & Fdy.
Hercules Powder Co.	2	Tank	50-ton	January	General American
Illinois Central	100	Cov. Hopper	70-ton	February	Pullman-Standard
	500	Box	....	March	R.R. Shops
	450	Hopper	....	March	R.R. Shops
	500	Flat	....	March	R.R. Shops
Illinois Terminal	200	Box	50-ton	May	Amer. Car & Fdy.
Minneapolis & St. Louis	250	Gondola	50-ton	April	General American
Minneapolis, St. Paul & Sault Ste. Marie	20	Cov. Hopper	70-ton	April	Amer. Car & Fdy.
Missouri-Kansas-Texas	100	Cov. Hopper	70-ton	June	Amer. Car & Fdy.
Missouri Pacific	100	Cov. Hopper	70-ton	January	Amer. Car & Fdy.
Monsanto Chemical Co.	3	Tank	40-ton	February	General American
	1	Tank	50-ton	February	General American
Montana-Dakota Utilities Co.	1	Tank	40-ton	June	General American
New York, New Haven & Hartford	75	Caboose		February	Harlan & Holl'sworth
Niagara Alkali Co.	6	Tank	40-ton	January	Amer. Car & Fdy.
Norfolk & Western	250	Box	50-ton	June	R.R. Shops
Northern Pacific	50	Refrigerator	....	March	Northern Refrigerator
Ohio State University	2	Hopper	50-ton	January	General American
Oldbury Electro-Chemical Co.	2	Tank	40-ton	February	General American
Pacific Fruit Express	500	Refrigerator	40-ton	May	Amer. Car & Fdy.
	500	Refrigerator	40-ton	May	General American
	500	Refrigerator	40-ton	May	Pacific Car & Fdy.
	500	Refrigerator	40-ton	May	Pullman-Standard
Pennsylvania Salt Mfg. Co.	3	M-U Tank		February	Amer. Car & Fdy.
	2	Tank	40-ton	May	Amer. Car & Fdy.
Pere Marquette	25	Caboose	30-ton	June	Harlan & Holl'sworth
Pittsburgh Steel Co.	2	Gondola	70-ton	May	Pressed Steel
Pittsburgh & West Virginia	100	Box	50-ton	January	Amer. Car & Fdy.
	100	Hopper	60-ton	March	Amer. Car & Fdy.
Republic Steel Corp.	5	Air Dump		February	Pressed Steel
Seaboard Air Line	200	Phosphate	70-ton	March	Pullman-Standard
Solvay Process Co.	6	Tank	40-ton	April	Amer. Car & Fdy.
Southern	1,000	Box	50-ton	April	Pullman-Standard
	600	Gondola	50-ton	April	Pressed Steel
	250	Ballast	70-ton	April	Amer. Car & Fdy.
	150	Cov. Cement Hopper	70-ton	April	Harlan & Holl'sworth
Tennessee Copper Co.	14	Side Dump	50-ton	May	Pressed Steel
Union Carbide & Carbon Corp.	2	Twin Hopper	50-ton	May	General American
Union Tank Lines	500	Tank	50-ton	June	Amer. Car & Fdy.
	100	Tank	50-ton	June	General American
United Carbon Co.	20	Cov. Hopper	50-ton	June	Amer. Car & Fdy.
Wabash	60	Cov. Hopper	70-ton	March	Amer. Car & Fdy.
	200	Box	40-ton	March	R.R. Shops
	20	Caboose	...	June	R.R. Shops
Warren Petroleum Corp.	15	Tank	50-ton	May	General American
	95	Tank	50-ton	June	Amer. Car & Fdy.
Wheeling & Lake Erie	750	Gondola	50-ton	February	Ralston
	750	Twin Hopper	60-ton	February	Amer. Car & Fdy.
Witco Chemical Co.	20	Cov. Hopper	50-ton	May	General American

* Reinstatement of an order previously placed and cancelled.
† In conjunction with the Panhandle Carbon Company.

Freight Cars Ordered for Export

First Six Months, 1946

Purchaser	No.	Class	Capacity	Month Ordered	Builder
Argentine State Railways	600	Box	35-ton	February	Pullman-Standard
	100	Cattle Car	....	February	Amer. Car & Fdy.
	300	Flat	....	February	Amer. Car & Fdy.
Buenos Aires & Pacific Ry.	60	Tank	...	June	Amer. Car & Fdy.
Colombian National Rys.	187	Gondola	...	April	Amer. Car & Fdy.
Ferro Carril de Antioquia (Colombia)	12	Tank	....	January	General American
France	8,750	Box	....	January	Amer. Car & Fdy.
	4,000	Gondola	....	January	Amer. Car & Fdy.
	4,500	Box	....	January	Pressed Steel
	3,000	Gondola	....	January	Greenville
	3,000	Gondola	....	January	Magor
	3,500	Box	....	January	General American
	10,000	Box	....	January	Pullman-Standard
French Colonial Supply Mission	75	Box	....	March	Pressed Steel
	75	Flat	....	March	Pressed Steel
Guayaquil & Quito Ry.	8	Tank	30-ton	March	Amer. Car & Fdy.

Orders for Passenger Cars for Service in the United States

First Six Months, 1946

Purchaser	No.	Type	Month Ordered	Builder
Atchison, Topeka & Santa Fe	2	Sleeping	January	Pullman-Standard
	12	Chair	April	Pullman-Standard
Atlantic Coast Line	43	Sleeping	June	Pullman-Standard
	12	Sleeping	June	Amer. Car & Fdy.
	2	Baggage	June	Amer. Car & Fdy.
	11	Dining	June	Pullman-Standard
	25	Coach	June	Pullman-Standard
Baltimore & Ohio	2	Buffet-Lnge.	January	Pullman-Standard
	8	Coach	January	Pullman-Standard
	2	Dining	January	Pullman-Standard
	2	Observation	January	Pullman-Standard
	2	Coach-Observ.	January	Pullman-Standard

(Table continued on next left-hand page)

the "Crescent" will be converted into an all-room train without open-section sleeping accommodations. Other equipment for this train will include 4 room-bar-lounge cars, 4 room-bar-lounge-observation cars, 4 dining cars, 4 baggage-dormitory cars and 5 post office cars.

Fifty-seven of the cars—also enough for four trains—will be assigned to the "Royal Palm", which operates between the Great Lakes region and Florida via Cincinnati, Ohio. North of Cincinnati, the train is handled by the New York Central and south of Jacksonville, Fla., it is handled by the Florida East Coast. The equipment will include 20 all-room sleeping cars, 16 coaches, 4 room-bar-lounge-observation cars, 4 cafe-lounge-coaches, 4 dining cars, 4 baggage-coaches and 5 post office cars.

Forty-one of the new cars will be used to modernize the Southern's present streamliners, the "Southerner" and the "Tennesseean", which were placed in service in 1941. Eleven all-room sleeping cars will be assigned to the "Tennesseean", which operates between Washington and Memphis, Tenn. The remaining cars—19 coaches, 6 bar-lounge-coaches and 5 dining cars—will be shared by the two trains. The "Southerner" is an all-coach train operating between New York and Washington over the Pennsylvania and from there to New Orleans via the Southern. The new cars assigned to these two trains will replace much of their present equipment, which will be used in other trains operated by the Southern.

Abandonments

CENTRAL OF NEW JERSEY.—This road has asked the federal district court at Trenton, N. J., for permission to apply to the Interstate Commerce Commission for authority to abandon a portion of a branch line between Kearny, N. J., and its Jersey City, N. J., terminal and to replace the passenger train service with bus service.

DES MOINES & CENTRAL IOWA.—Division 4 of the Interstate Commerce Commission has authorized this road to abandon portions of its line between a point in Saylor township, Iowa, and Colfax, 18.8 miles, and between Moran, Iowa, and Woodward, 3.1 miles. In approving the transactions, the commission imposed employee-protection conditions similar to those prescribed in the precedent-setting Burlington case, 257 I. C. C. 700.

EVANSVILLE & OHIO VALLEY.—This electric railroad has applied to the Interstate Commerce Commission for authority to abandon its entire line, extending from a connection with the Southern at Rockport, Ind., to a point near Yankeetown, 13 miles.

UNION PACIFIC.—This road has applied to the Interstate Commerce Commission for authority to abandon operation of a line, which the Oregon-Washington Railroad & Navigation also seeks authority to abandon, extending from Blakes Junction, Ore., to Robinette 33.09 miles.

Financial

ALTON.—*Reorganization.*—Division 4 of the Interstate Commerce Commission has ordered submitted to eligible creditors and stockholders the court- and commission-approved plan of reorganization for this road. Under the commission order the plan is being submitted under section 77 of the Bankruptcy Act for acceptance or rejection by four classes of claimants with claims evidenced by bonds issued under the Chicago & Alton refunding mortgage dated October 1, 1899, and certificates for capital stock of the Joliet & Chicago, the Louisiana & Missouri River and the Kansas City, St. Louis & Chicago. Holders of these securities on July 25, 1946, are entitled to vote.

APALACHICOLA NORTHERN.—*Bonds.*—Division 4 of the Interstate Commerce Commission has authorized this road to issue $645,000 in 4 per cent first mortgage bonds, the proceeds of which, together with other funds, will be used to repay advances of a similar amount made to the applicant by the St. Joe Paper Company. The bonds, to be dated June 30, will mature serially over 50 years beginning June 30, 1947, and will be sold at 99 per cent of par to a syndicate headed by the Clyde C. Pierce Corporation, Jacksonville, Fla., and Leedy Wheeler Company, Orlando. On this basis, the average annual cost will be approximately 4.07 per cent. The commission said that inasmuch as the amount of bonds to be issued is less than $1,000,000, and is within the exemptions listed in its report of May 8, 1944, competitive bidding was not required.

BALTIMORE & OHIO.—*Equipment Trust Certificates.*—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for $4,060,000 of 1½ per cent Series Q equipment trust certificates, the proceeds of which will be applied toward the payment of $5,085,000 for equipment the applicant proposes to acquire. The certificates will be sold at 99.001 and accrued interest, the bid of the Philadelphia National Bank and four associates, which had been accepted subject to commission approval.

CANADIAN NATIONAL.—*Capital Outlay.*—Canadian Finance Minister J. L. Ilsley has submitted a request to the Parliament at Ottawa for the usual annual financial aid for the Canadian National. This year the amount sought is $22,550,000 for capital outlay.

DELAWARE, LACKAWANNA & WESTERN.—*Merger With Leased Line.*—Buell Hollister, president of the Cayuga & Susquehanna, told that road's stockholders in a letter that a tentative agreement had been reached with representatives of the Delaware, Lackawanna & Western looking to the ultimate merger of the two roads. The Lackawanna, Mr. Hollister said, would offer to purchase the stock of the Cayuga line at not less than $36 a share. An appropriate agreement, he continued, will be submitted to the directors of each road and if it is approved by them, the stockholders will be informed.

DULUTH, SOUTH SHORE & ATLANTIC.—*Reorganization.*—Division 4 of the Interstate Commerce Commission has authorized a protective committee for holders of

Chesapeake & Ohio	10	Coach	January	Budd
	3	Coach-Bag.	January	Budd
	3	Din.-Lnge.-Obs.	January	Budd
Chicago Great Western	3	Baggage	February	Pullman-Standard
Chicago, Milwaukee, St. Paul & Pacific	28	Sleeping	February	Pullman-Standard
	6	Mail	March	R.R. Shops
	6	Bag.-Dorm.	March	R.R. Shops
	24	Coach	March	R.R. Shops
	6	Dining	March	R.R. Shops
	6	Lnge.-Recrea.	March	R.R. Shops
	14	Miscellaneous	March	R.R. Shops
Chicago, Rock Island & Pacific	4	Sleeping	March	Pullman-Standard
Chicago & North Western	4	Dining	March	Amer. Car & Fdy.
	2	Lunch-Diner	March	Amer. Car & Fdy.
	3	Club-Lounge	March	Amer. Car & Fdy.
	1	Cafe-Lounge	March	Amer. Car & Fdy.
	1	Mail-Bag.	March	Amer. Car & Fdy.
	2	P. O.-Mail	March	Amer. Car & Fdy.
	3	Bag.-Dorm.	March	Amer. Car & Fdy.
	4	Sleeping	May	Amer. Car & Fdy.
Delaware, Lackawanna & Western	6	Sleeping	June	Amer. Car & Fdy.
Erie	7	Sleeping	March	Pullman-Standard
Florida East Coast	9	Sleeping	June	Pullman-Standard
	2	Dining	June	Pullman-Standard
	5	Coach	June	Pullman-Standard
	3	Sleeping	June	Amer. Car & Fdy.
	3	Baggage	June	Amer. Car & Fdy.
Illinois Central	4	Miscellaneous	April	Pullman-Standard
Kansas City Southern	6	Coach	January	Amer. Car & Fdy.
	2	Mail-Bag.	January	Amer. Car & Fdy.
	8	Sleeping	February	Pullman-Standard
	2	Dining	March	Amer. Car & Fdy.
Missouri Pacific	4	Sleeping	May	Budd
Norfolk & Western	18	Miscellaneous	April	Pullman-Standard
	3	Sleeping	May	Pullman-Standard
Pennsylvania	50	Sleeping	January	Budd
	12	Dining	January	Budd
	6	Kitch.-Dorm.	January	Budd
	2	Coach-Lnge.	January	Budd
	22	Sleeping	January	Amer. Car & Fdy.
	5	Dining	January	Amer. Car & Fdy.
	5	Kitch.-Dorm.	January	Amer. Car & Fdy.
	21	Coach	January	Amer. Car & Fdy.
	4	Bag.-Dorm.	January	Amer. Car & Fdy.
	87	Sleeping	January	Pullman-Standard
	6	Sleeping	March	Budd
	4	Sleeping	May	Amer. Car & Fdy.
	2	Sleeping	May	Pullman-Standard
	8	Sleeping	June	Pullman-Standard
	2	Sleeping	June	Amer. Car & Fdy.
	2	Coach	June	Pullman-Standard
Richmond, Fredericksburg & Potomac	3	Sleeping	March	Pullman-Standard
	3	Sleeping	May	Pullman-Standard
	5	Sleeping	June	Pullman-Standard
	2	Sleeping	June	Amer. Car & Fdy.
	1	Dining	June	Pullman-Standard
	3	Coach	June	Pullman-Standard
St. Louis-San Francisco	1	Sleeping	February	Pullman-Standard
Seaboard Air Line	13	Sleeping	March	Pullman-Standard
	6	Sleeping	March	Budd
	3	Sleeping	March	Amer. Car & Fdy.
Southern Pacific	16	Chair	June	Pullman-Standard
	11	Dining	June	Pullman-Standard
	3	Mail-Bag.	June	Pullman-Standard
	2	Parlor-Observ.	June	Pullman-Standard
	4	Lounge	June	Pullman-Standard
	3	Coach	June	Pullman-Standard
	1	Bag.-Dorm.	June	Pullman-Standard
	2	Tavern	June	Pullman-Standard
	4	Coffee Shop-Lnge.	June	Pullman-Standard
	2	Coffee Shop	June	Pullman-Standard
	2	Kitchen	June	Pullman-Standard
	2	Kitchen-Dorm.	June	Pullman-Standard
Union Pacific	10	Din.-Lunch	February	Amer. Car & Fdy.
	9	Club-Lounge	February	Amer. Car & Fdy.
	6	Club-Dorm.	February	Amer. Car & Fdy.
	3	Cafe-Lounge	February	Amer. Car & Fdy.
	11	Dining	February	Amer. Car & Fdy.
	11	Mail-Bag.	February	Amer. Car & Fdy.
	3	Mail	February	Amer. Car & Fdy.
	3	Mail	February	Amer. Car & Fdy.
	9	Bag.-Dorm.	February	Amer. Car & Fdy.
	15	Sleeping	May	Amer. Car & Fdy.
Wabash	4	Sleeping	May	Amer. Car & Fdy.

Orders for Steam Locomotives for Domestic Railroads

First Six Months, 1946

Purchaser	No.	Wheel Arrangement	Service	Tractive Force	Month Ordered	Builder
Aliquippa & Southern	2	0-6-0	Switching	.....	June	American
Chesapeake & Ohio	30	2-8-4	Freight	83,350*	June	American
	10	2-8-4	Freight	83,350*	June	Lima
White Pass & Yukon	2	2-8-2	Freight	25,200	March	Baldwin

* Including Booster.

Steam Locomotives Ordered for Export

First Six Months, 1946

Purchaser	No.	Wheel Arrangement	Service	Tractive Force	Month Ordered	Builder
Consejo Adm. de los Ferro Carril Nationales (Colombia)	*					
	6	4-8-2	Freight	30,500	June	Baldwin
Ferro Carril de Ambalema-Ibaque (Colombia)	2	4-8-0	Freight	27,264	February	Baldwin
Ferro Carril de Antioquia (Colombia)	6	2-8-2	Pass.-Frt.	26,400	April	Baldwin
Finnish State Railways	10	2-10-0	Freight	51,500	June	Baldwin
	10	2-10-0	Freight	51,500	June	American

Industrias Reunidas F. Matarazzio (Brazil)	1	2-6-0	Freight	.....	January	H. K. Porter
National Railways of Mexico	10	2-8-0	Freight	43,300	June	Baldwin
Soviet Union	13	2-10-0	Freight	51,500*	May	American
	30	0-6-0	Freight	.....	February	Dav. Besler
United Fruit Co. (Guatemala)	6	2-8-2	Freight	27,625	March	Baldwin
U. S. Government (For China through U. N. R. R. A.)	80	2-8-0	Freight	43,300	February	Baldwin
	35	2-8-0	Freight	43,300*	February	American
	45	2-8-0	Freight	31,500	April	Lima

* Including Booster.

Domestic Orders for Electric and Diesel-Electric Locomotives

First Six Months, 1946

Purchaser	No.	Service	Type	Horse-power	Month Ordered	Builder
American Cyanamid Co.	1	Switching	Diesel-Elec.	660	February	Westinghouse-Baldwin
American Rolling Mill Co.	1	Switching	Diesel-Elec.	660	June	Westinghouse-Baldwin
Atchison, Topeka & Santa Fe	1	Passenger	Diesel-Elec.	6,000	April	West.-Fairbanks, Morse
Atlanta & West Point	1	Freight	Diesel-Elec.	1,500	May	Electro-Motive
Chesapeake Western	3	Switching	Diesel-Elec.	600	June	Electro-Motive
Chicago Great Western	18	Freight	Diesel-Elec.	1,500	January	Electro-Motive
Chicago, Milwaukee, St. Paul & Pacific	5	Passenger	Diesel-Elec.	6,000	April	West.-Fairbanks, Morse
Delaware, Lackawanna & Western	9	Freight	Diesel-Elec.	1,500	June	Electro-Motive
Erie	21	Pass. or Pass.-Frt.	Diesel-Elec.	1,500	January	Electro-Motive
	12	Freight	Diesel-Elec.	1,500	June	Electro-Motive
Escanaba & Lake Superior	1	Switching	Diesel-Elec.	1,000	January	Westinghouse-Baldwin
Florida East Coast	5	Passenger	Diesel-Elec.	2,000	June	Electro-Motive
Great Northern	6	Freight	Diesel-Elec.	1,500	June	Electro-Motive
	8	Pass. or Pass.-Frt.	Diesel-Elec.	1,500	June	Electro-Motive
	3	Passenger	Diesel-Elec.	2,000	June	Electro-Motive
Kansas City Southern	1	Switching	Diesel-Elec.	660	January	Westinghouse-Baldwin
	8	Freight	Diesel-Elec.	1,500	April	Electro-Motive
	8	Switching	Diesel-Elec.	1,000	April	Electro-Motive
Lancaster & Chester	1	Switching	Diesel-Elec.	1,000	February	Electro-Motive
La Salle & Bureau County	1	Switching	Diesel-Elec.	660	January	Westinghouse-Baldwin
Maryland & Pennsylvania	1	Switching	Diesel-Elec.	600	March	Electro-Motive
	2	Switching	Diesel-Elec.	1,000	March	Electro-Motive
Missouri Pacific	18	Freight	Diesel-Elec.	1,500	April	Electro-Motive
	18	Freight	Diesel-Elec.	1,500	June	Electro-Motive
Missouri-Kansas-Texas	6	Switching	Diesel-Elec.	1,000	June	Westinghouse-Baldwin
New Orleans Public Belt	3	Switching	Diesel-Elec.	660	April	Westinghouse-Baldwin
New York Central	2	Pass.-Frt.	Diesel-Elec.	4,500	March	Westinghouse-Baldwin
	34	Freight	Diesel-Elec.	1,500	March	Electro-Motive
	20	Pass. or Pass.-Frt.	Diesel-Elec.	2,000	March	Electro-Motive
Patapsco & Back Rivers	4	Switching	Diesel-Elec.	660	February	Westinghouse-Baldwin
Pennsylvania	1	Passenger	Diesel-Elec.	6,000	February	Westinghouse-Baldwin
Pere Marquette	*2	Switching	Diesel-Elec.	1,000	February	Electro-Motive
	4	Passenger	Diesel-Elec.	2,000	April	Electro-Motive
Phelps Dodge Corp.	7	Switching	Electric	840	January	Westinghouse-Baldwin
Reading	6	Switching	Diesel-Elec.	1,000	May	Westinghouse-Baldwin
St. Louis-San Francisco	2	Switching	Diesel-Elec.	1,000	February	Westinghouse-Baldwin
Seaboard Air Line	8	Switching	Diesel-Elec.	1,000	May	Westinghouse-Baldwin
Southern Pacific	15	Passenger	Diesel-Elec.	2,000	May	Electro-Motive
Tennessee Eastman Corp.	1	Switching	Diesel-Elec.	1,000	February	Westinghouse-Baldwin
Tennessee Coal, Iron & R. R. Co.	4	Switching	Diesel-Elec.	1,000	May	Westinghouse-Baldwin
Union Pacific	1	Passenger	Diesel-Elec.	6,000	May	West.-Fairbanks, Morse
Wabash	1	Switching	Diesel-Elec.	1,000	March	Westinghouse-Baldwin
	1	Switching	Diesel-Elec.	1,000	March	Electro-Motive
West Virginia Northern	2	Switching	Diesel-Elec.	1,000	April	Electro-Motive

Foreign Orders for Diesel-Electric Locomotives

First Six Months, 1946

Purchaser	No.	Service	Type	Horse-power	Month Ordered	Builder
Canadian National	10	Switching	Diesel-Elec.	1,000	January	Electro-Motive
Crows Nest Pass Coal Co. (Canada)	1	Switching	Diesel-Elec.	660	June	Westinghouse-Baldwin
France	70	Switching	Diesel-Elec.	660	January	Westinghouse-Baldwin
France (For French North Africa)	4	Switching	Diesel-Elec.	1,500	January	Westinghouse-Baldwin
Iron Mines Co. of Venezuela	3	Switching	Diesel-Elec.	1,500	March	Westinghouse-Baldwin

In addition, orders were reported by American Locomotive-General Electric for six 660-hp., 71 1,000-hp. and 13 1,500-hp. switching locomotives, 57 1,500-hp. freight units and two 6,000-hp. passenger locomotives, the purchasers not being designated.

this road's first mortgage 5 per cent gold bonds, due January 1, 1937, to solicit from the holders of such bonds authorizations for the committee to act for them in connection with the road's reorganization proceedings under section 77 of the Bankrutpcy Act.

GULF, MOBILE & OHIO.—*Equipment Trust Certificates.*—Division 4 of the Interstate Commerce Commission has authorized this road to assume liability for $2,000,000 of 2 per cent Series A equipment trust certificates, the proceeds of which will be applied toward the payment of $2,519,400 for equipment which the applicant proposes to acquire, as noted in *Railway Age*, June 29, page 1285. The certificates will be sold at 100.557 and accrued dividends, the bid of a syndicate headed by Salomon Brothers & Hutzler and Stroud & Company, which had been accepted subject to commission approval. On this basis, the average annual cost will be approximately 1.92 per cent.

NEW JERSEY & NEW YORK.—*Reorganization Expenses.*—Division 4 of the Interstate Commerce Commission has set $6,000 per year for the period effective through June 30, 1947, as the maximum limit of compensation to be paid to Peter Duryee and to Walter T. Margetts, Jr., trustee and counsel for trustee, respectively, for services and expenses in connection with the reorganization of this road.

PENNSYLVANIA. — *Trackage Rights.* — This road, as lessee of the Pennsylvania, Ohio & Detroit, has applied to the Interstate Commerce Commission for approval of trackage-rights arrangements over 1,200 ft. of two New York, Chicago & St. Louis tracks in Bellevue, Ohio. The arrangements are part of a plan whereby a new interlocking plant will be installed and operations simplified at that point where the tracks of both roads run parallel to each other and cross New York Central and Wheeling & Lake Erie tracks at grade.

PENNSYLVANIA. — *Equipment Trust Certificates.*—This road has invited bids by July 23 for $7,322,000 of equipment trust certificates, which are the remainder of an aggregate issue of $18,135,000 of 1⅞ per cent certificates under Pennsylvania Railroad equipment trust, series Q, to finance in part the construction and acquisition of 45 steam locomotives and tenders, 112 passenger cars, 300 covered hopper cars and 12 Diesel-electric switching locomotives. The total cost of this equipment, a portion of which is under construction in the company's shops, is estimated at not less than $22,668,750. The certificates will be dated July 1, 1945, and will mature in installments on July 1 each year from July 1, 1947, to and including July 1, 1960.

PERE MARQUETTE. — *Equipment Trust Certificates.*—This road has awarded, subject to Interstate Commerce Commission approval, $850,000 of serial equipment trust certificates of 1946 to the Savings Bank of Baltimore, on a bid of 99.636 for a 1½ per cent coupon, an interest cost basis to the company of approximately 1.57 per cent. The certificates, to be dated July 15, 1946, will mature in ten equal annual installments payable on July 15 each year, starting in 1947, and will finance, in part, the purchase of 200 50-ton steel automobile box cars. The total cost of the equipment securing the certificates will be approximately $1,083,874.

SOUTHERN PACIFIC.—*Extension of Trackage Rights.*—This road has applied to the Interstate Commerce Commission for authority to extend its trackage rights on the Yuma Valley over the entire section of that road between Yuma, Ariz., and Somerton, approximately 15 miles. The Y. V. is owned by the United States Reclamation Service.

Average Prices Stocks and Bonds

	July 16	Last week	Last year
Average price of 20 representative railway stocks	62.35	64.37	55.38
Average price of 20 representative railway bonds	97.51	98.90	98.00

Dividends Declared

Cleveland, Cincinnati, Chicago & St. Louis.—$5.00, semi-annually; preferred, $1.25, quarterly, both payable July 31 to holders of record July 19.

Michigan Central.—$25.00, semi-annually, payable July 31 to holders of record July 19.

Mine Hill & Schuylkill Haven.—$1.00, semi-annually, payable August 1 to holders of record July 15.

North Carolina.—7% guaranteed, $3.50, semi-annually, payable August 1 to holders of record July 21.

Northern of New Hampshire.—$1.50, quarterly, payable July 31 to holders of record July 11.

Paterson & Hudson River.—$1.37½, payable July 15 to holders of record July 6.

Wheeling & Lake Erie.—4% prior lien, $1.00; 5½% convertible preferred, $1.37½, both quarterly and both payable August 1 to holders of record July 24.

Supply Trade

Raymond H. Romig has been appointed district manager in Washington, D. C., for the **Midvale Company.** He succeeds **Herbert H. Moffitt,** who has retired.

Joseph T. Ryerson & Son, Inc., a steel distributor with warehouses in eleven cities, has been appointed distributor of the **Babcock & Wilcox Tube Co.'s** electric resistance welded boiler tubes.

The **Graver Tank & Mfg. Co., Inc.,** East Chicago, Ind., has announced the appointment of **Edward W. Welp** as sales manager of water conditioning equipment. Mr. Welp, former technical director of the process equipment division, has spent 32 years with the firm in every phase of research, design and construction of water conditioning equipment.

R. W. Mason, Jr., formerly associated with the Lithium Company, Newark, N. J., has joined the development and research division of the **International Nickel Company, Inc.,** with headquarters at the technical section of the division in the General Motors Building, Detroit, Mich.

Wayne B. O'Neill, with the Johns-Manville Sales Corporation for 17 years, has opened headquarters at 118 New Montgomery street, San Francisco, Calif., where he will handle railroad and automotive supplies.

N. E. Olsen has been appointed manager at New Haven, Conn., for the **Graybar Electric Company** to succeed the late **G. C. Krenning.** Manager at Syra-

N. E. Olsen

cuse, N. Y., since 1930, Mr. Olsen joined the company 24 years ago as assistant office salesman in New York.

The **Westinghouse Electric Corporation** has started construction of a new plant, warehouse and office building on an eight-acre site in the geographical center of St. Louis, Mo. Various types of electrical switchgear and motor controls for industrial plants and public utility substations will be produced, as well as motor controls for drilling oil wells and equipment for safeguarding pipe lines. The repair section of the plant will be given over to the rejuvenation of Diesel-electric motors and generators for railroads, light traction apparatus and transformers, and the rebuilding of motors for mills and shops.

Norman H. Shipley has been appointed district manager of the Madison, Ill., plant of the **American Car & Foundry Co.** Born in St. Louis, Mo., and educated in

Norman H. Shipley

the public schools there, Mr. Shipley joined American Car & Foundry at the St. Louis plant in June, 1912. While working at the plant he studied mechanical engineering and general administrative work. He served in various capacities at the St. Louis plant until his appointment in March, 1941, as assistant district manager at Madison. Mr. Shipley belongs to and is active in the Car Department Association of St. Louis.

R. H. Wood, general manager of the **Union Switch & Signal Co.,** has been appointed general counsel of the **Westinghouse Air Brake Company** and Union Switch & Signal in charge of patent and legal matters, with headquarters at Wilmerding, Pa., and Swissvale. Born in Worthington, Ohio, Mr. Wood was graduated from Ohio State University in elec-

R. H. Wood

trical engineering, and later from the Duquesne University Law School, Pittsburgh, Pa.

He entered the engineering department of Union Switch & Signal in July, 1922, and later that year was transferred to the patent department. In 1936, he was named patent attorney for Union Switch & Signal and in 1943 was appointed assistant to the general manager. Named assistant general manager in July, 1944, he was elected general manager in April, 1945, which position he held until his recent appointment.

Leslie B. Worthington, vice-president in charge of sales of the **United States Steel Supply Company** (a subsidiary of the United States Steel Corporation) at Chicago, has been elected president, with the same headquarters, succeeding **Ernest E. Aldous,** who has retired after 45 years of service with U. S. Steel subsidiaries.

Holub Industries, Inc., a new concern recently organized by Bert E. Holub, formerly general manager of Ideal Industries, has begun the manufacture of electrical and mechanical products in its new plant at 413 DeKalb avenue, Sycamore, Ill. **Gordon W. Wetzel,** formerly Mr. Holub's assistant at Ideal, has terminated his service with that company to be sales manager of the new concern. Mr. Wetzel was recently released from the armed forces after 39 months' service.

OBITUARY

Edward J. Garrigan, director and vice-president in charge of sales of the Okonite Company, died at his home in Rutherford, N. J., on July 4. He was 62 years old. Mr. Garrigan, closely identified with the electrical industry for 45 years, the latter half with Okonite, was born in New York and educated in its public schools, later re-

Edward J. Garrigan

ceiving his electrical training at the Pratt Institute. His early career started in the New York Telephone Company's engineering department from which he joined the Western Electric Company as an electrical inspector. He then was appointed general superintendent of the Waterbury Company's wire and cable mill, subsequently moving to Schenectady, N. Y., as superintendent of the General Electric Company's cable plant there.

In 1924 after having been general superintendent of the Habirshaw Electric Cable Corporation, Mr. Garrigan joined Okonite

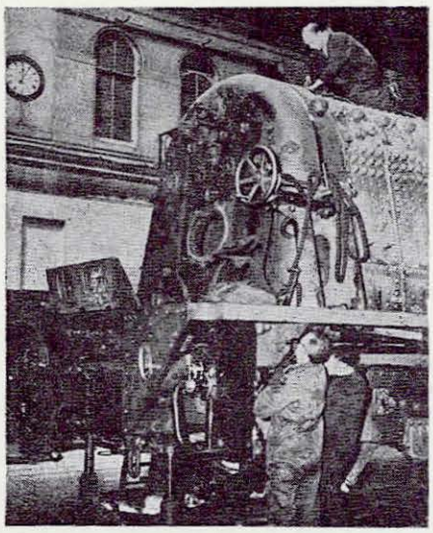
and was appointed factory sales manager, charged particularly with the responsibility of developing a market for the products of Okonite's newly-formed affiliate, the Okonite-Callender Cable Company, Inc., which was established as a separate unit to make paper-insulated power cables for the utilities. In 1937 he was elected vice-president and sales manager and in 1945 was elected a director and vice-president in charge of sales.

Hamilton W. Baker, president of the American Locker Company, Inc., since its organization in 1931, died on June 14 at his home in Chestnut Hill, Massachusetts.

Construction

CANADIAN NATIONAL.—Canadian Transport Minister Lionel Chevrier has given notice at Ottawa of a bill in Parliament to authorize this road to build a branch from Barraute, Que., to Kiask Falls, about 55 miles. The project, which is expected to cost about $4,125,000, will serve an area producing pulp and paper.

HAMPTON & BRANCHVILLE.—The Interstate Commerce Commission has postponed, pending further order, the effective date of the certificate issued by its Division 4 under date of June 11 in Finance Docket No. 14957, which authorized this road to extend its line from Hampton, S. C., to connect with the Seaboard Air Line at Luray and with the Southern at Lena, a total distance of approximately 12 miles. Division 4's report was noted in *Railway Age*, July 6, page 28. The Atlantic Coast Line and its affiliate, the Charleston & Western Carolina, have petitioned for reopening, reconsideration, and oral argument before the entire commission.



British Combine Photo

Work in progress on a frame and boiler of one of the 110 locomotives ordered from the North British Locomotive Co. by the Indian State Railways

Railway Officers

EXECUTIVE

C. R. Hook, Jr., assistant to the general manager of the Rustless Iron & Steel division of the American Rolling Mill Company at Baltimore, Md., has been named assistant to the president for personnel of the Chesapeake & Ohio and the Pere Marquette and the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio.

Harvey M. Johnson, whose election as senior vice-president of the Missouri Pacific, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of June 15, was born at East St. Louis, Ill., on May 22, 1894, and prior to entering railway service in 1917, served for several years with the Southern Freight Association at St. Louis, in various capacities from tariff clerk to chief clerk. He began railway service with the Missouri Pacific as a clerk in the freight traffic department and in 1920 was advanced to chief clerk to the foreign freight agent, being further promoted to traveling foreign freight agent at St. Louis in May, 1923. Later he was made

Harvey M. Johnson

assistant foreign freight agent and in March, 1929, he was promoted to foreign freight agent. In June of the following year Mr. Johnson was further advanced to general freight agent at Kansas City, Mo., returning to St. Louis in November, 1932, as assistant freight traffic manager. Four years later he was advanced to freight traffic manager, and in June, 1940, he was promoted to general freight traffic manager. In October, 1941, he was advanced to chief traffic officer, and in May of this year he was promoted to executive assistant, the position he held at the time of his new appointment.

Robert E. O'Grady, whose promotion to assistant vice-president of the Erie, with headquarters at Chicago, was reported in the *Railway Age* of July 13, was born at Brooklyn, N. Y., on February 24, 1896, and is a graduate of St. Francis college, Brooklyn. He entered railway service in June, 1914, as assistant to the freight traffic manager of the Southern Pacific, and from March, 1916, to March, 1921, he was with the traffic department of the American Sugar Refining Company except for a two-year period when he served in the armed forces during World War I. On the latter date Mr. O'Grady was appointed a commercial agent of the Erie at New York,

Robert E. O'Grady

and five years later he was promoted to perishable freight agent, with the same headquarters. In June, 1932, he was advanced to manager of perishable freight traffic, also at New York, and in 1939 his title was changed to manager of perishable and dairy traffic, with the same headquarters. In March, 1941, Mr. O'Grady was advanced to coal traffic manager, with headquarters at Cleveland, Ohio, the position he held at the time of his new appointment.

Robert H. McGraw, whose promotion to assistant to the vice-president of the New York Central, with headquarters at Chicago, was reported in the *Railway Age* of July 13, was born at Syracuse, N. Y., on January 31, 1896. He entered railway service on September 13, 1915, as a locomotive fireman on the New York Central at Syracuse, becoming assistant road foreman of engines in 1917, and locomotive engineman one year later, with the same headquarters. In 1922 Mr. McGraw was advanced to road foreman of engines at Watertown, N. Y., and in 1927 he was promoted to trainmaster, serving in that capacity at various points on the road including Poughkeepsie, N. Y., Albany, Rochester and Syracuse. In 1943 Mr. McGraw was advanced to assistant superintendent with headquarters at Buffalo, N. Y., the position he held at the time of his new appointment.

H. B. Voorhees, whose retirement as vice-president and executive representative of the Baltimore & Ohio, and president of the Baltimore & Ohio Chicago Terminal, with headquarters at Chicago, was reported in the *Railway Age* of June 8, was born at Saratoga Springs, N. Y., on January 22, 1876, and is a graduate of Rensselaer Polytechnic Institute. He entered railway service on March 1, 1897, as an assistant supervisor on the Philadelphia & Reading (now the Reading) at Tamaqua, Pa., and for the following five years served with the Reading in that capacity and as supervisor, as assistant trainmaster at Williamsport, Pa., and Philadelphia, and as trainmaster

at Reading, Pa. Mr. Voorhees started his service with the Baltimore & Ohio on December 1, 1901, as an assistant engineer at Pittsburgh, Pa. The following year he was promoted to division engineer at Baltimore, Md., and on September 1, 1903, he entered the operating department as assistant to the general superintendent of transportation. From February, 1905, to May, 1912, he served successively as superintendent and general agent of the Philadelphia division at Philadelphia, as assistant to the president and as general superintendent of transportation. He was then promoted to general superintendent of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton (both now parts of the Baltimore & Ohio) at Cincinnati, Ohio, and during federal control served as general superintendent of transportation of the B. & O. and its affiliated lines. On September 1, 1919, Mr. Voorhees was promoted to general manager of the New York Terminal lines and vice-president and general manager of the Staten Island Rapid Transit; next he was transferred to the western lines of the B. & O. at Cincinnati, with the title of general manager.

In June, 1929, he was elected to the positions he held at the time of his retirement. When the B. & O. purchased the Alton in 1931 Mr. Voorhees was elected a vice-president of that road, and when it went into bankruptcy in 1943 he was appointed its chief executive officer, resigning from that position in October, 1945, to devote his entire time to the B. & O.

FINANCIAL, LEGAL AND ACCOUNTING

Yancey D. Ward, whose promotion to general claim agent of the St. Louis Southwestern, with headquarters at Pine Bluff, Ark., was reported in the *Railway Age* of July 6, was born at Paris, Tenn., on February 4, 1894, and attended the Memphis (Tenn.) Law School. He entered railway service in July, 1911, as a telegraph operator on the Nashville, Chattanooga &

Yancey D. Ward

St. Louis, and in 1915 he became secretary to the president of the Memphis Union Station Company and a clerk in the assistant superintendent's office of the N. C. & St. L., at Memphis. In November, 1920, Mr. Ward went with the Cotton Belt as a clerk to the assistant superintendent, with headquarters at Pine Bluff, later being transferred to the office of the superintendent. On January 15, 1925, he was advanced to chief clerk of the claim department and in September, 1935, he was promoted to claim agent, with the same headquarters, the position he held at the time of his new appointment.

Starr Thomas, commerce attorney of the Atchison, Topeka & Santa Fe at San Francisco, Cal., has been promoted to general attorney and commerce counsel, with headquarters at Chicago.

Senate G. Seabrook, whose retirement as general claim agent of the St. Louis Southwestern with headquarters at Pine Bluff, Ark., was reported in the *Railway Age* of July 6, was born at Pine Bluff, on August 13, 1874, and entered railway service on September 5, 1892, as a yard clerk of the St. Louis Southwestern, subsequently holding various positions including chief yard clerk, clerk to the claim agent and assistant claim agent. On July 1, 1906, he was promoted to the position he held at the time of his retirement.

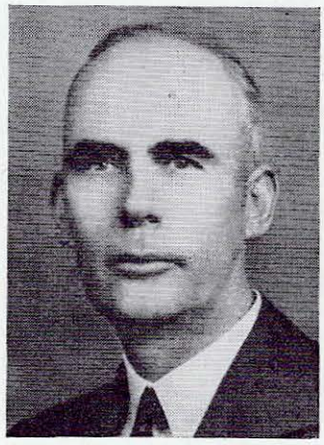
Henry H. Hull, whose retirement as assistant general counsel of the Erie at Cleveland, Ohio, was announced in the *Railway Age* of June 29, was born at Bath, N. Y., on June 24, 1879. Mr. Hull was graduated from Hamilton college (A.B., 1901) and admitted to the New York bar in 1904. After practicing law in New York for three years, he became associated with the Erie in 1907 as a lawyer for the road, serving in that capacity for six years until he was appointed assistant to the general attorney. There followed subsequent promotions to assistant general attorney, assistant general solicitor, and general attorney before Mr. Hull became assistant general counsel, from which position he has retired.

OPERATING

C. H. Winter and **W. R. McPherson,** assistants to the general superintendent of transportation of the Chicago, Milwaukee, St. Paul & Pacific at Chicago, have been appointed respectively superintendent of transportation, and assistant superintendent of transportation, Lines East of Mobridge, S. D., a change of titles.

J. T. Sisson, assistant trainmaster of the Illinois Central at Yazoo City, Miss., has been promoted to trainmaster, with headquarters at Vicksburg, Miss., succeeding **H. F. Wilson,** who has been transferred to Palestine, Ill., where he replaces **O. H. Zimmerman,** who in turn has been transferred to Ft. Dodge, Iowa. **D. F. Quiett,** trainmaster at Jackson, Tenn., has been transferred to Bluford, Ill., succeeding **H. E. Benham,** who has been relieved at his own request. **R. O. Bodell,** trainmaster at Ft. Dodge, has been transferred to Jackson, Miss., replacing **E. E. Schlottman,** who goes to Jackson, Tenn., relieving Mr. Quiett.

J. C. Nickerson, whose promotion to superintendent of the Eastern Kentucky division of the Louisville & Nashville, with headquarters at Ravenna, Ky., was announced in the July 13 issue of *Railway Age,* entered railway service in 1902 as a water boy on the Birmingham division of the L. & N., and for the next four years worked during the summer months in various positions, including apprentice foreman,



J. C. Nickerson

relief foreman and section foreman. In 1906 Mr. Nickerson began a four-year course at the Alabama Polytechnic Institute, graduating in 1910 and returning to the L. & N., where he engaged in construction work until 1914 when he was promoted to roadmaster on the Kentucky (now the Cincinnati) division. On August 1, 1931, he was advanced to the position he held at the time of his new appointment.

TRAFFIC

G. E. Maccubbin has been appointed general agent of the Southern Pacific, with headquarters at Philadelphia, Pa., succeeding **G. H. Vogel,** deceased.

H. Gifford Till has been appointed director of industrial research and development of the Missouri-Kansas-Texas, with headquarters at Dallas, Tex., a newly-created position.

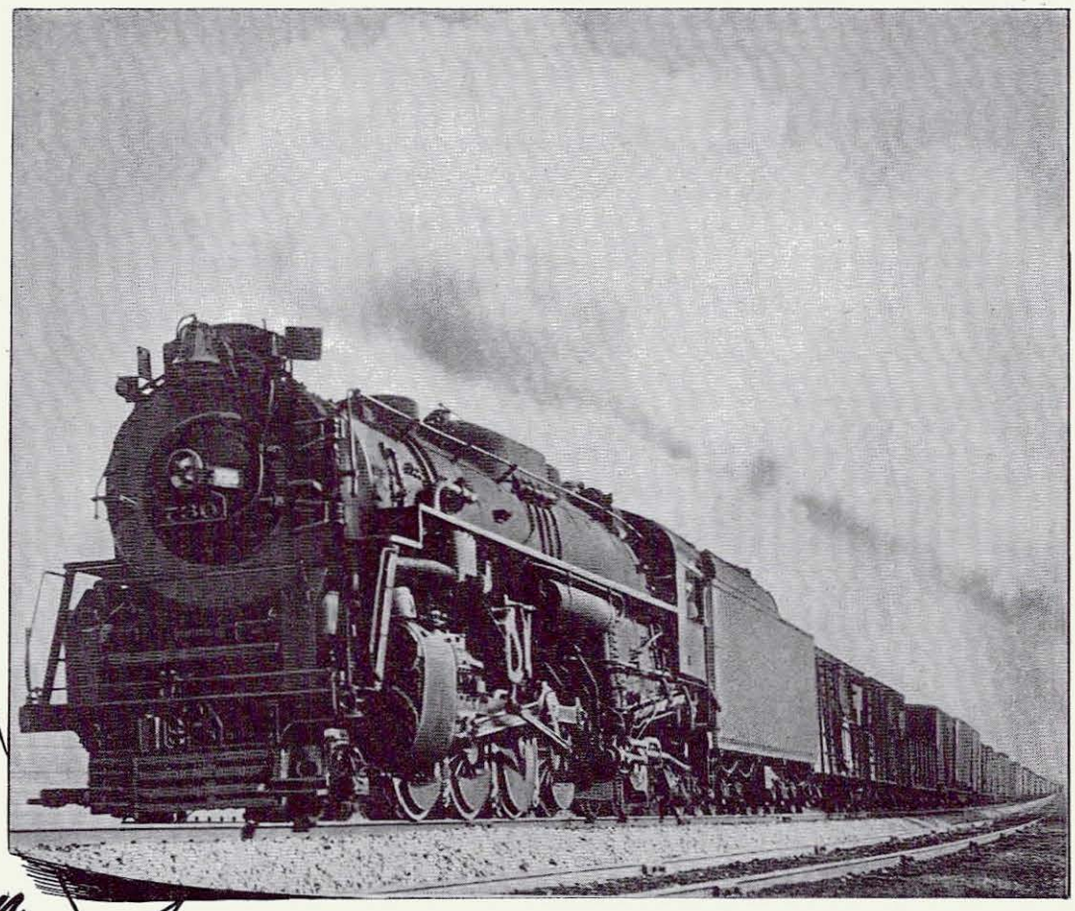
George G. Akerstrom, assistant division freight agent of the Atchison, Topeka & Santa Fe at Oklahoma City, Okla., has been promoted to division freight agent, with headquarters at Denver, Colo.

V. C. Knorst, traffic representative of the Missouri Pacific at Chicago, has been promoted to foreign freight agent, with the same headquarters, succeeding **M. J. Friedkin,** who has resigned.

Charles F. Bigelow, assistant general passenger agent of the Southern, with headquarters at Asheville, N. C., has been appointed general passenger agent at Charlotte, N. C., succeeding **R. H. Graham,** deceased. **C. M. Hill,** assistant general passenger agent at Atlanta, Ga., has been transferred to Asheville, succeeding Mr. Bigelow, while **R. H. Hamilton** succeeds Mr. Hill at Atlanta.

R. A. Pearce, passenger traffic manager of the Alton, has been given supervision over the passenger traffic department

News Department continued on next left-hand page



The Nickel Plate relies on

LIMA 2-8-4's to maintain fast freight schedules

In 1945, agricultural, animal and manufactured products constituted 60% of the thirty-six million tons of freight carried on the Nickel Plate.

Much of this traffic calls for extremely rapid transportation, and to aid in maintaining the necessarily fast schedules for heavy trains, the Nickel Plate employs a fleet of fifty-five modern Lima-built 2-8-4 steam locomotives, placed in service during the last five years.

LIMA LOCOMOTIVE WORKS INCORPORATED, LIMA, OHIO

of the Gulf, Mobile & Ohio. The item reporting this change, which appeared in the *Railway Age* of July 6, erroneously stated that these two roads had been merged on July 1, and that new headquarters will be established in St. Louis, Mo., on August 1. On that date the passenger traffic departments of these lines will be transferred to St. Louis, but other offices will remain at their present locations.

R. T. Watt, general perishable freight agent of the Missouri Pacific at St. Louis, Mo., has been promoted to perishable traffic manager, with the same headquarters, succeeding **M. W. Dancy,** who has been appointed a special representative of the perishable freight department, with headquarters at Los Angeles, Cal. **W. J. Kavanaugh,** perishable freight agent, has been advanced to district manager of perishable traffic, with headquarters as before at Chicago. The position of perishable freight agent at this point has been abolished.

ENGINEERING & SIGNALING

Gunnar Tornes, whose retirement as superintendent of bridges and buildings of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, was reported in the *Railway Age* of July 6, was born at Bergen, Norway, on June 30, 1889. He

Gunnar Tornes

entered railway service on October 26, 1906, as a laborer on the Milwaukee and served as carpenter foreman and construction foreman until 1914 when he was promoted to general construction superintendent of the Minneapolis (Minn.) track depression work. In 1917 he was advanced to division supervisor of bridges and buildings, with headquarters at Mitchell, S. D., and in 1927 he was promoted to general supervisor of bridges and buildings, Lines East, with headquarters at Chicago. In 1931 he was advanced to the position he held at the time of his retirement.

The engineering offices of the Lehigh Valley (system) have been transferred from Bethlehem, Pa., to New York City.

The following changes of titles in the telegraph and signal department have been announced by the Chicago & North Western: **S. E. Noble,** superintendent of telegraph and signals, becomes assistant chief engineer, communications and signals. **O. S. Tomkins** and **M. E. Moyer** assistant superintendents of telegraph and signals, become signal engineer and communications engineer respectively. All three men maintain headquarters at Chicago.

Robert F. Wood, acting bridge engineer of the Reading at Philadelphia, Pa., has been appointed bridge engineer there, succeeding **Percival S. Baker,** assistant chief engineer at Philadelphia, who retired on May 31 after more than 40 years' service. Mr. Baker was born on November 13, 1877, at Philadelphia, and was graduated from the University of Pennsylvania (B. S., 1899, M. S., 1900). He entered railway service as a rodman for the Philadelphia & Reading (now the Reading) in 1899. From 1900 to 1905 he served as a draftsman for the American Bridge Company, then joined the Philadelphia Rapid Transit Company in this capacity, and went with the Philadelphia & Reading in 1906 as a computer. Mr. Baker advanced to assistant engineer in 1914 and to engineer of bridges and buildings in 1918, becoming engineer of bridges in 1927. He maintained the latter post until 1943, when he was promoted to assistant chief engineer, the post he held at the time of his retirement.

MECHANICAL

G. E. Bell, assistant master mechanic of the Illinois Central at Hazel Crest, Ill., has been promoted to master mechanic, with headquarters at McComb, Miss., succeeding **A. D. Haley,** who has been assigned to other duties on account of ill health.

Thomas B. Davis, whose appointment as master car builder of the Western Maryland, with headquarters at Hagerstown,

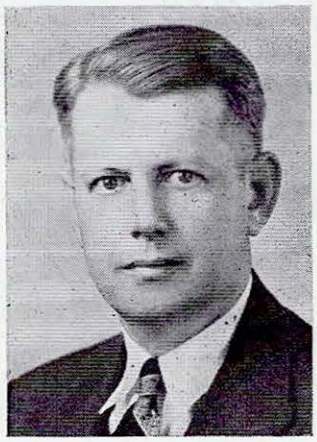
Thomas B. Davis

Md., was announced in the June 15 issue of *Railway Age,* was born on September 28, 1904, at Baltimore, Md., and entered railroading in 1922 as a clerk for the Western Maryland in the maintenance of equipment department. He became a carman apprentice, and on completion of apprenticeship worked in various capacities until he was appointed car foreman at the Baltimore terminal in August, 1937. Mr. Davis was named traveling general car foreman in April, 1943, with headquarters at Hagerstown, where he advanced to his present post on May 16.

C. D. Allen, master mechanic of the Cincinnati division of the Chesapeake & Ohio, with headquarters at Stevens, Ky., has been transferred to the Huntington division at Huntington, W. Va., succeeding **F. J. Topping,** whose death on July 4 is reported elsewhere in these columns. **G. W. Lushbaugh,** general foreman at Clifton Forge, Va., has been appointed master mechanic at Stevens to succeed Mr. Allen.

S. G. Peterson, general foreman, car department, of the Seaboard Air Line at Portsmouth, Va., has been appointed superintendent car department, with headquarters at Norfolk, Va., succeeding **W. E. Corr,** whose retirement was reported in the *Railway Age* of June 15.

F. R. Denney, mechanical engineer of the Texas & Pacific at Dallas, Tex., has been promoted to assistant mechanical superintendent, with the same headquarters. **H. D. Hollis,** chief draftsman, has been advanced to mechanical engineer, with headquarters as before at Dallas, succeeding Mr. Denney. Mr. Denney was born at Fortsville, Ind., on April 30, 1902, and is a graduate of Purdue university. He entered railway service in 1924 with the Cleveland,



F. R. Denney

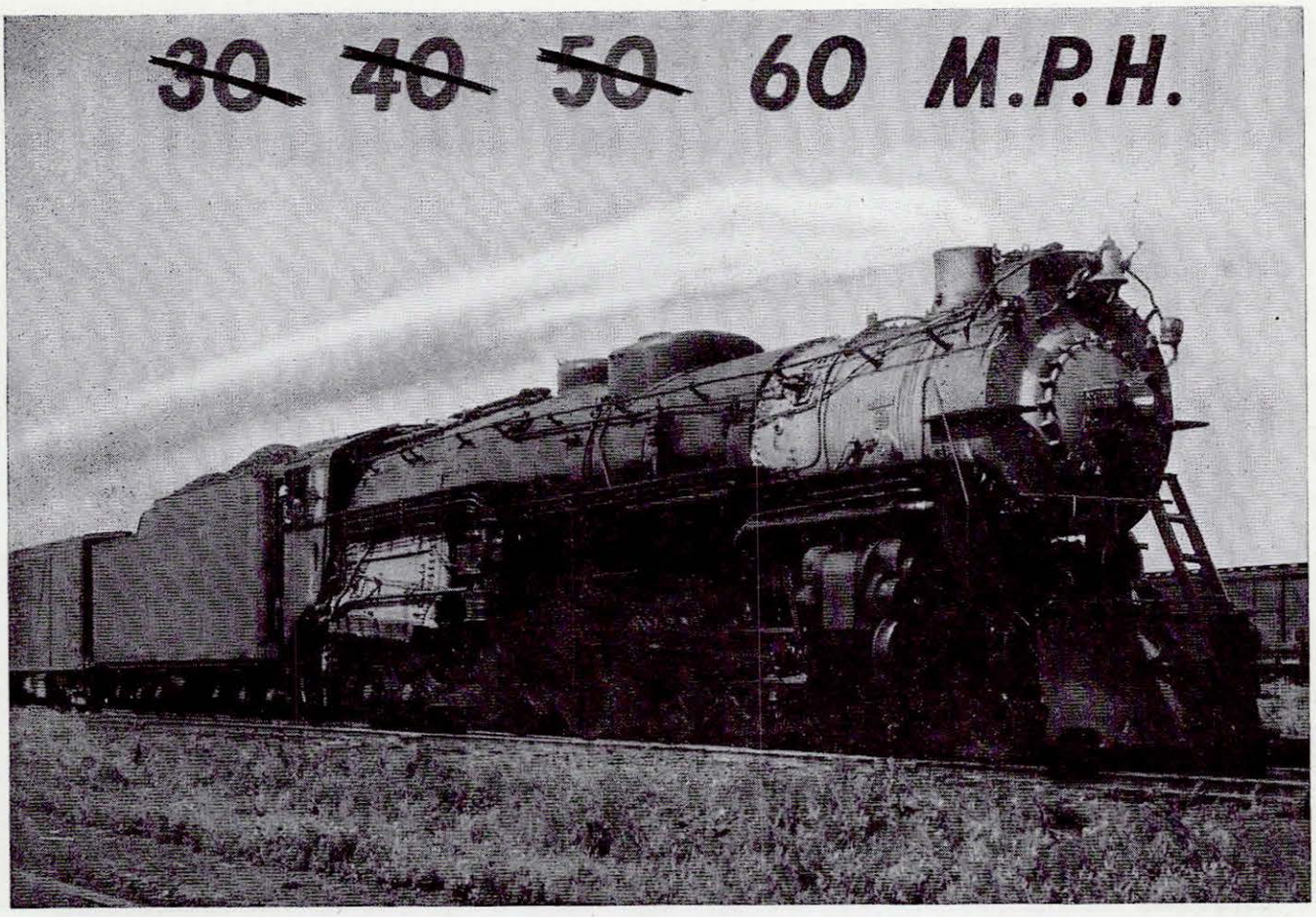
Cincinnati, Chicago & St. Louis as an apprentice, subsequently serving in supervisory capacities until 1930 when he resigned to enter the employ of the Superheater Company as a service engineer. On May 29, 1933, Mr. Denney went with the T. & P., as a machinist, advancing to the positions of foreman, chief draftsman, mechanical inspector, assistant master mechanic, master mechanic and mechanical engineer, remaining in the latter position until his new appointment.

OBITUARY

Frank J. Topping, master mechanic of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., died there on July 4.

Henry J. Hoffman, general auditor of the San Francisco & Napa Valley, with headquarters at Napa, Cal., died recently in a San Francisco (Cal.) hospital.

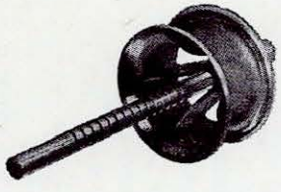
Table of Revenues and Expenses begins on next left-hand page



Constantly Increasing Speed of Operation

means that to meet faster schedules, *train tonnage must be reduced.*

OR — to maintain those schedules with the same train load, *locomotive horsepower must be increased.*



THE FRANKLIN SYSTEM of STEAM DISTRIBUTION

will provide additional horsepower at the higher speed.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1946

Name of Road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1946	1945
Akron, Canton & Youngstown	May	171	$251,678	$80	$268,269	$61,305	$38,889	$23,948	$117,903	$264,329	98.5	$3,940	$7,478	—$19,970	$46,849
	5 mos.	171	1,484,656	543	1,567,374	296,068	197,453	118,358	585,170	1,299,279	82.9	268,095	103,494	81,576	321,908
Alton	May	959	1,214,188	607,459	2,091,843	507,256	366,473	75,739	927,018	2,013,556	96.3	78,287	168,186	—274,404	426,772
	5 mos.	959	6,889,716	3,608,692	12,070,722	2,564,067	2,507,382	420,070	5,261,523	11,501,669	95.3	569,053	905,207	—1,042,727	2,292,644
Atchison, Topeka & Santa Fe System	May	13,085	21,728,701	5,524,380	29,488,518	4,949,488	6,922,006	786,793	11,589,286	24,999,846	84.8	4,488,672	3,281,400	1,513,811	5,809,183
	5 mos.	13,085	113,057,593	36,613,112	162,300,626	23,712,780	33,056,291	3,626,665	59,464,519	123,660,596	76.2	38,640,030	21,847,190	17,675,735	24,453,043
Atlanta & West Point	May	93	193,947	70,445	292,549	42,102	58,758	12,220	170,049	305,483	104.4	—12,934	*24,364	—9,535	36,876
	5 mos.	93	977,167	408,730	1,564,737	229,499	285,429	61,693	824,517	1,506,477	96.3	58,260	*59,230	12,062	156,853
Western of Alabama	May	133	180,129	70,090	269,806	40,001	62,676	11,688	133,436	267,849	99.3	1,957	*12,168	19,191	36,867
	5 mos.	133	989,805	431,121	1,561,066	269,183	317,021	59,501	704,139	1,447,566	92.7	113,500	*3,772	124,595	192,657
Atlantic Coast Line	May	5,569	7,314,746	2,044,645	9,930,908	2,830,026	1,757,912	250,139	4,485,767	9,778,427	98.5	152,481	700,000	—973,667	685,710
	5 mos.	5,569	38,626,501	13,447,068	55,771,761	13,698,965	9,650,456	1,278,531	23,093,890	50,187,189	90.0	5,584,572	4,100,000	—366,931	4,739,527
Charleston & Western Carolina	May	343	251,767	8,368	267,403	70,984	65,811	12,979	130,577	288,467	107.9	—21,064	20,000	—43,765	45,699
	5 mos.	343	1,383,418	37,371	1,461,685	387,150	351,663	60,115	644,714	1,481,158	101.3	—19,473	105,000	—137,485	239,219
Baltimore & Ohio	May	6,139	16,703,114	2,853,818	20,962,287	3,437,771	5,162,131	644,022	9,896,598	20,369,737	97.2	592,550	1,517,290	—1,268,938	4,307,128
	5 mos.	6,139	90,719,961	16,967,700	114,739,226	18,683,610	30,085,447	2,983,287	53,449,126	111,445,412	97.1	3,293,814	7,973,524	—6,496,510	19,199,226
Staten Island Rapid Transit	May	29	143,986	105,577	259,876	54,882	35,590	1,533	140,269	255,130	98.2	4,746	35,524	—49,210	119,678
	5 mos.	29	742,513	554,964	1,354,285	268,706	193,572	8,050	737,265	1,323,936	97.8	30,349	180,596	—241,462	437,956
Bangor & Aroostook	May	602	567,500	40,043	628,149	231,182	237,111	7,827	226,117	738,918	117.6	—110,769	*6,213	—77,432	63,110
	5 mos.	602	5,077,864	269,127	5,475,791	1,166,802	1,057,910	35,937	1,637,739	4,091,730	74.7	1,384,061	590,281	703,696	661,391
Bessemer & Lake Erie	May	214	879,477	1,089	907,812	159,791	401,274	18,010	318,763	943,466	103.9	—35,654	58,640	51,474	501,534
	5 mos.	214	3,066,916	8,477	3,147,020	710,123	2,013,715	76,657	1,405,141	4,434,230	140.9	—1,287,210	268,784	—345,511	930,172
Boston & Maine	May	1,764	3,843,861	1,105,553	5,583,184	1,055,543	1,011,126	104,157	2,578,891	5,012,885	89.8	570,299	440,748	—96,431	561,499
	5 mos.	1,764	21,534,197	6,703,618	31,013,753	5,326,495	5,398,210	507,817	14,096,383	26,721,159	86.2	4,292,594	2,364,655	467,776	3,005,908
Burlington, Rock Island	May	228	181,668	56,879	257,835	47,995	37,822	3,639	103,276	211,319	82.0	46,516	9,841	1,289	93,163
	5 mos.	228	887,225	313,234	1,297,636	203,098	153,939	19,048	489,702	951,327	73.3	346,309	46,567	101,448	271,915
Cambria & Indiana	May	35	2,248	.....	2,304	11,097	52,905	675	6,327	77,719	3373.22	—75,415	*13,981	—35,256	48,003
	5 mos.	35	445,461	.....	445,739	57,259	248,096	3,410	82,978	428,659	961.68	17,080	185,066	188,556	246,513
Canadian Pacific Lines in Maine	May	234	276,088	59,082	366,356	125,157	60,225	8,506	158,108	363,815	99.3	2,541	21,910	—84,205	140,580
	5 mos.	234	2,200,056	353,794	2,711,459	365,988	404,372	42,009	1,079,204	1,952,410	72.0	759,049	116,605	216,958	790,278
Canadian Pacific Lines in Vermont	May	90	101,984	14,345	138,925	48,492	37,926	3,074	123,455	218,375	157.2	—79,450	10,117	—125,069	—94,452
	5 mos.	90	471,329	86,283	653,040	203,391	175,990	15,249	634,241	1,056,007	161.7	—402,967	53,346	—653,954	—549,451
Central of Georgia	May	1,815	1,751,893	324,375	2,283,757	391,069	413,699	92,759	1,247,208	2,302,038	100.8	—18,281	231,416	—213,129	727,447
	5 mos.	1,815	9,746,793	2,250,028	13,283,504	2,331,112	2,419,886	449,682	6,530,709	12,521,983	94.3	761,521	1,008,637	—163,459	2,520,091
Central of New Jersey	May	649	2,858,257	463,096	3,530,620	488,791	751,638	65,778	1,993,621	3,493,659	95.4	39,961	368,172	—480,516	454,760
	5 mos.	649	15,231,642	2,653,598	19,137,060	2,463,782	3,965,066	324,083	9,982,913	17,663,402	91.6	1,473,658	1,947,266	—1,270,541	2,722,070
Central Vermont	May	422	460,796	60,000	577,513	105,476	98,750	11,200	340,140	590,353	102.2	—12,840	53,110	—113,771	3,671
	5 mos.	422	2,478,536	357,000	3,092,519	537,753	609,394	52,376	1,751,978	3,118,919	100.9	—26,400	228,375	—535,191	—44,203
Chesapeake & Ohio	May	3,084	9,082,168	1,078,111	10,582,423	1,821,497	2,357,121	332,348	4,208,025	9,328,628	88.2	1,253,795	966,345	478,986	2,695,544
	5 mos.	3,084	59,020,449	6,775,956	68,285,627	10,777,294	13,568,165	1,542,156	24,255,922	53,272,404	78.0	15,013,223	8,805,647	8,576,224	13,391,948
Chicago & Eastern Illinois	May	910	1,069,218	333,342	1,580,167	345,697	259,511	75,798	815,970	1,612,925	102.1	—32,757	120,600	—318,068	275,377
	5 mos.	910	6,501,966	1,922,763	9,475,548	1,638,314	2,293,256	388,633	4,588,877	9,501,203	100.5	—25,654	692,500	—1,347,385	1,274,541
Chicago & Illinois Midland	May	131	302,529	484	322,578	41,121	87,139	21,188	116,849	293,035	90.8	29,543	34,616	—5,181	99,306
	5 mos.	131	1,815,714	4,126	1,910,612	214,202	459,966	119,377	710,004	1,645,289	86.1	235,323	168,079	110,131	394,877
Chicago & North Western	May	8,065	7,472,186	2,565,639	11,274,711	2,245,997	2,643,582	284,220	4,933,941	10,661,328	94.6	613,383	878,610	—397,879	2,002,495
	5 mos.	8,065	40,476,229	14,377,074	61,885,221	10,847,739	13,317,244	1,286,717	28,469,363	56,951,410	92.0	4,933,811	4,490,335	—831,927	9,059,331
Chicago, Burlington & Quincy	May	8,863	9,771,467	1,923,183	13,080,658	2,719,238	2,000,278	327,511	5,126,800	10,754,238	82.2	2,326,420	1,333,206	755,789	2,641,413
	5 mos.	8,863	59,746,447	13,040,021	80,950,471	12,043,846	11,327,704	1,662,545	28,241,353	56,404,723	69.7	24,545,748	11,181,518	11,612,329	13,968,499
Chicago Great Western	May	1,500	1,538,037	133,252	1,856,583	370,619	271,163	66,023	913,633	1,697,699	91.4	158,884	87,206	—77,530	260,622
	5 mos.	1,500	8,926,450	1,020,354	11,041,215	2,127,976	1,728,041	373,299	5,429,286	10,057,233	91.1	983,982	661,082	—647,243	1,221,209
Chicago, Indianapolis & Louisville	May	541	699,138	32,239	763,637	136,816	172,741	35,027	350,731	745,407	97.6	18,230	61,289	—119,301	180,342
	5 mos	541	3,538,439	212,807	3,972,146	576,160	874,049	179,666	1,819,202	3,693,806	93.0	278,340	292,553	—365,108	1,042,767

Table continued on next left-hand page

Availability

IS HIGHER

with Security Circulators

To help maintain the high standard of performance of Northern Pacific's big 4-6-6-4s, each of them is equipped with eight Security Circulators.

Compared with other locomotives, those with Security Circulators are available for continuous operation for longer periods because they have cleaner flues, longer arch life, and improved combustion, so that boiler maintenance is substantially reduced.

These advantages are in addition to an improved circulation of water over the crown sheet and in side water-legs.

AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1946

Name of Road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1946	Net railway operating income 1945
Chicago, Milwaukee, St. Paul & Pacific	May	10,733	$10,070,654	$2,077,352	$13,581,166	$3,560,542	$3,114,377	$309,984	$6,492,429	$14,290,887	105.2	—$709,721	$1,171,000	—$2,104,609	$2,353,278
	5 mos.	10,733	57,282,748	12,592,308	77,993,263	13,527,531	15,807,457	1,589,355	36,487,053	71,487,365	91.7	6,505,898	1,193,000	3,107,641	12,192,031
Chicago, Rock Island & Pacific	May	7,652	7,854,248	2,116,538	10,881,284	1,764,907	2,073,509	390,948	4,654,808	9,517,892	87.5	1,363,392	339,370	428,730	2,639,150
	5 mos.	7,652	44,423,657	13,220,809	62,909,033	8,517,164	11,143,447	1,930,986	25,147,298	50,108,465	79.7	12,800,568	4,130,475	5,272,880	11,636,071
Chicago, St. Paul, Minneapolis & Omaha	May	1,616	1,374,936	237,672	1,840,622	421,876	401,354	45,480	1,013,410	1,980,671	107.6	—140,049	147,074	—374,622	271,106
	5 mos.	1,616	8,084,719	1,295,031	10,446,685	1,960,189	2,017,018	236,463	5,718,285	10,408,591	99.6	38,094	797,185	—1,455,451	1,424,571
Clinchfield Railroad	May	302	678,344	5,101	691,359	113,246	149,703	25,819	227,466	543,649	78.6	147,710	135,764	44,058	498,245
	5 mos.	302	4,881,764	38,064	4,970,416	556,904	844,428	131,947	1,398,254	3,058,383	61.5	1,912,033	686,782	1,363,284	2,504,036
Colorado & Southern	May	748	569,075	158,919	807,230	150,147	163,255	20,520	347,508	729,992	90.4	77,238	64,544	1,365	157,716
	5 mos.	748	2,871,239	919,052	4,236,440	840,731	859,306	103,532	1,851,128	3,904,659	92.1	331,781	341,030	—71,631	1,025,932
Fort Worth & Denver City	May	902	600,577	176,488	860,154	233,437	138,151	31,454	370,857	832,188	96.7	27,966	68,523	—68,362	201,248
	5 mos.	902	2,757,868	1,254,595	4,481,299	1,126,745	819,153	158,104	1,707,812	4,131,173	92.2	350,126	294,504	—41,959	841,226
Colorado & Wyoming	May	42	57,178	.....	100,558	12,045	13,914	697	44,962	77,545	77.1	23,013	13,078	9,718	12,989
	5 mos.	42	247,661	.....	433,221	43,055	67,568	3,914	183,759	327,551	75.6	105,670	8,087	85,050	101,449
Columbus & Greenville	May	168	120,800	3,480	130,271	28,977	21,687	4,331	56,964	126,808	97.3	3,463	8,254	—4,892	—13,768
	5 mos.	168	617,011	30,169	690,631	146,860	108,189	25,180	249,642	603,432	87.4	87,199	62,148	25,223	41,673
Delaware & Hudson	May	846	2,659,965	117,109	2,865,399	531,722	716,025	53,220	1,312,290	2,754,922	96.1	110,477	223,946	—94,309	450,885
	5 mos.	846	15,874,037	718,917	17,055,149	2,534,031	4,310,595	277,372	7,433,479	15,249,137	89.4	1,806,012	1,141,909	723,047	2,135,776
Delaware, Lackawanna & Western	May	973	3,809,643	743,620	5,007,906	767,318	949,562	122,361	2,599,606	4,647,321	92.8	360,585	170,980	147,455	688,092
	5 mos.	973	20,455,326	4,218,065	27,186,453	3,245,249	4,910,096	620,575	13,906,259	23,722,571	87.3	3,463,882	1,874,819	1,430,112	2,730,082
Denver & Rio Grande Western	May	2,386	2,671,841	600,571	3,459,389	688,453	941,555	116,592	1,498,016	3,448,662	99.7	10,727	312,848	—282,018	1,411,739
	5 mos.	2,386	14,726,610	4,230,162	20,079,217	2,635,113	5,019,853	578,803	8,351,356	17,680,040	88.1	2,399,177	1,523,010	801,891	5,574,448
Denver & Salt Lake	May	232	162,466	4,018	174,943	42,911	44,690	4,378	70,867	176,930	101.1	—1,987	30,526	20,376	67,431
	5 mos.	232	1,147,547	35,595	1,236,608	254,554	285,049	19,680	510,070	1,136,502	91.9	100,106	161,567	161,699	355,833
Detroit & Mackinac	May	230	88,839	5,743	99,520	26,812	12,403	599	37,668	82,064	82.4	17,456	5,424	3,845	—9,597
	5 mos.	230	441,437	20,697	494,668	105,570	75,771	3,736	186,941	397,445	80.3	97,223	24,281	37,021	—854
Detroit & Toledo Shore Line	May	50	246,982	.....	248,676	32,015	28,298	10,139	94,053	173,965	70.0	74,711	21,707	8,039	51,794
	5 mos.	50	1,624,656	.....	1,631,556	167,711	149,542	51,096	574,919	990,063	60.7	641,493	196,291	153,313	298,291
Detroit, Toledo & Ironton	May	464	511,260	1,042	542,396	113,091	150,449	16,714	199,485	505,351	93.2	37,045	*12,832	31,938	117,491
	5 mos.	464	3,709,958	5,308	3,903,259	539,752	798,076	87,386	1,215,815	2,783,330	71.3	1,119,929	380,143	533,938	1,025,047
Duluth, Missabe & Iron Range	May	546	2,459,266	1,848	2,860,622	440,339	319,376	5,591	689,582	1,508,702	52.7	1,351,920	230,160	1,116,155	2,506,708
	5 mos.	546	3,962,704	17,924	4,606,122	1,719,612	1,835,038	30,256	2,102,258	5,931,966	128.8	—1,325,844	467,647	—1,806,152	1,420,227
Duluth, Winnipeg & Pacific	May	175	163,000	1,200	167,500	51,131	29,165	2,837	87,282	174,982	104.5	—7,482	16,066	—30,774	19,401
	5 mos.	175	1,078,000	8,000	1,108,500	238,380	173,626	13,317	510,381	958,962	86.5	149,538	92,352	—90,733	13,664
Elgin, Joliet & Eastern	May	392	1,322,338	19	1,572,654	248,438	349,332	20,647	840,916	1,540,571	98.0	32,083	145,461	—262,494	387,270
	5 mos.	392	7,650,614	150	9,097,346	1,327,260	2,067,424	99,588	4,490,980	8,376,264	92.1	721,082	750,493	—613,189	2,171,546
Erie	May	2,242	7,677,357	709,389	8,988,625	1,215,739	2,000,373	247,338	4,628,093	8,636,375	96.1	352,250	*97,656	—455,686	1,860,463
	5 mos.	2,242	40,993,552	4,122,126	48,319,153	5,166,253	9,926,125	1,258,694	24,048,103	43,161,661	89.3	5,157,492	2,825,902	—408,400	6,840,705
Florida East Coast	May	682	1,320,314	562,211	2,035,677	352,554	363,899	65,377	807,700	1,743,606	85.7	292,071	10,657	155,689	402,637
	5 mos.	682	8,010,674	3,932,733	12,982,790	1,610,726	1,770,528	282,690	4,439,503	8,836,299	68.1	4,146,491	1,155,688	2,363,230	2,717,649
Georgia Railroad	May	328	473,774	80,941	589,310	86,011	110,434	25,122	321,346	568,143	96.4	21,167	38,187	1,290	199,497
	5 mos.	328	2,501,912	435,677	3,127,900	474,788	642,819	128,122	1,606,168	2,984,294	95.4	143,606	189,233	—6,829	852,928
Georgia & Florida	May	408	169,323	2,352	176,112	57,695	24,759	11,566	72,715	174,697	99.2	1,415	12,012	—22,146	1,105
	5 mos.	408	925,046	15,218	965,615	271,905	135,102	57,419	380,338	883,986	91.5	81,629	60,372	—44,811	27,820
Grand Trunk Western	May	972	1,988,000	271,000	2,392,000	526,133	541,495	47,384	1,543,092	2,778,907	116.2	—386,907	195,608	—656,116	363,857
	5 mos.	1,015	10,509,000	1,186,000	12,549,000	2,553,686	2,844,025	220,766	6,925,830	13,153,225	104.8	—604,225	558,804	—1,448,608	2,127,050
Canadian National Lines in New England	May	172	120,000	8,000	147,800	37,609	44,711	2,287	106,352	201,824	136.6	—54,024	21,716	110,516	17,897
	5 mos.	172	715,600	44,700	904,100	263,623	208,771	11,439	578,625	1,157,543	128.0	—253,443	108,580	—560,009	—384,200
Great Northern	May	8,332	10,350,876	1,005,370	12,288,897	2,656,871	1,995,742	314,060	4,503,053	9,935,784	80.9	2,353,113	1,063,455	1,215,499	2,440,145
	5 mos.	8,332	48,264,012	7,169,222	60,286,038	12,801,710	12,535,807	1,364,090	23,634,119	52,833,979	87.6	7,452,059	5,719,559	1,289,451	8,149,600
Green Bay & Western	May	234	170,056	837	176,712	53,487	22,075	11,497	75,882	175,340	99.2	1,372	22,167	—27,015	—17,464
	5 mos.	234	1,058,892	1,790	1,086,905	251,237	119,813	56,814	445,283	930,852	85.6	156,053	130,004	—21,833	47,131

Table continued on next left-hand page

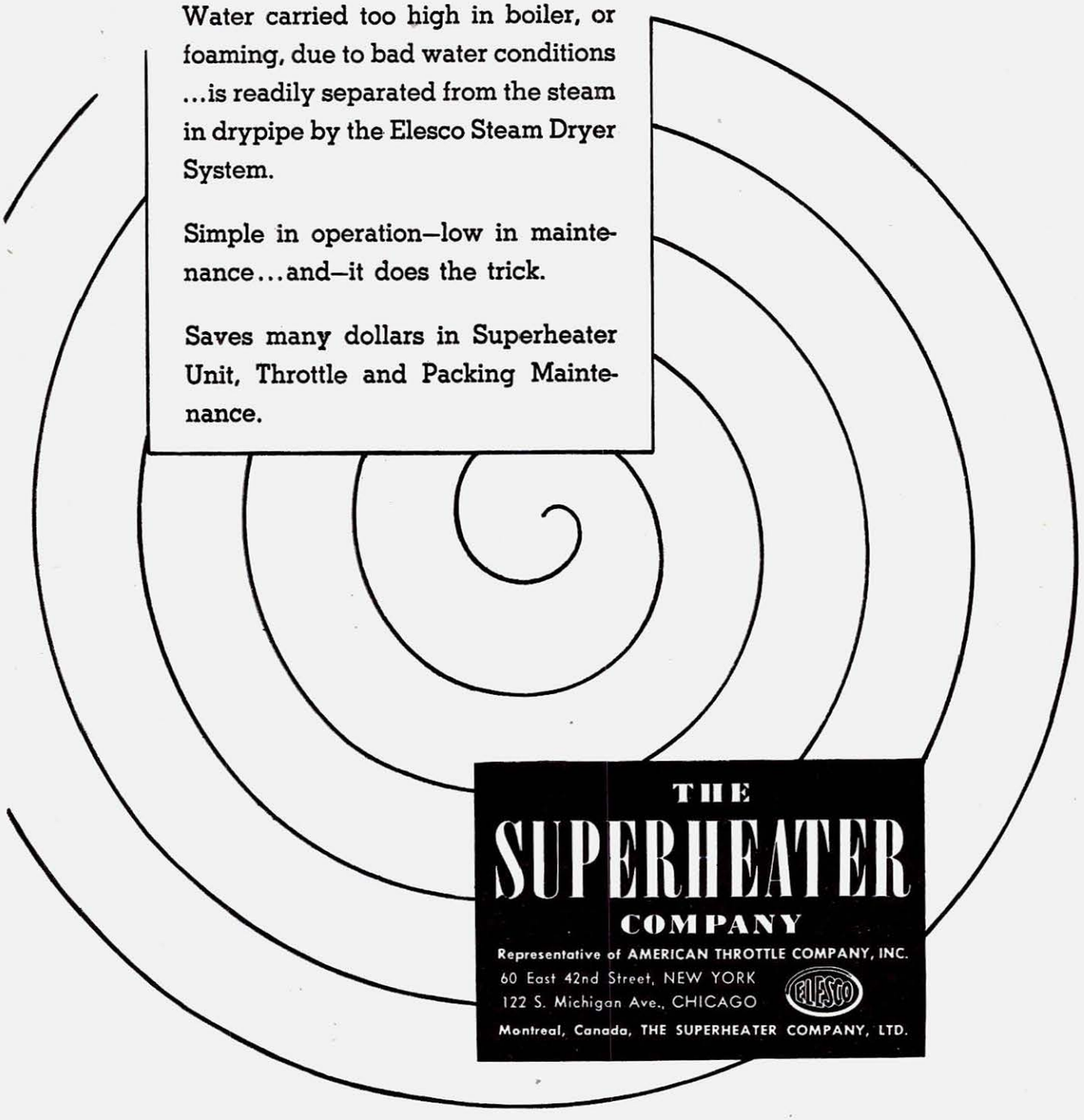
WATER

is necessary for the purpose of generating steam in boilers—But . . . it should not be carried over into the Superheater Units for generation there.

Water carried too high in boiler, or foaming, due to bad water conditions ...is readily separated from the steam in drypipe by the Elesco Steam Dryer System.

Simple in operation—low in maintenance...and—it does the trick.

Saves many dollars in Superheater Unit, Throttle and Packing Maintenance.



THE
SUPERHEATER
COMPANY
Representative of AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street, NEW YORK
122 S. Michigan Ave., CHICAGO
ELESCO
Montreal, Canada, THE SUPERHEATER COMPANY, LTD.

A-1801

Superheaters • Superheater Pyrometers • Exhaust Steam Injectors • Steam Dryers • Feedwater Heaters • American Throttles

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1946

Name of Road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income: 1946	1945
Gulf, Mobile & Ohio	May	1,945	$2,479,865	$135,483	$2,710,299	$550,389	$448,115	$102,875	$1,024,015	$2,276,898	84.0	$433,401	$185,542	$109,506	$457,738
	5 mos.	1,945	13,025,449	831,422	14,355,922	2,859,070	2,771,433	497,234	5,356,481	12,221,715	85.1	2,134,207	987,460	295,789	1,908,851
Illinois Central	May	5,077	10,510,944	2,087,408	13,640,011	2,651,636	2,409,697	280,873	5,232,555	11,363,303	83.3	2,276,708	1,204,746	806,943	2,092,007
	5 mos.	5,080	55,304,902	12,713,382	73,411,878	12,225,382	13,145,204	1,374,904	28,499,052	59,393,427	80.9	14,018,451	7,406,766	5,892,819	10,945,793
Yazoo & Mississippi Valley	May	1,524	1,730,233	181,940	2,008,995	442,703	249,086	41,962	839,478	1,662,380	82.7	346,615	206,049	64,773	585,388
	5 mos.	1,524	8,537,728	1,537,813	10,627,992	2,325,769	1,310,159	208,422	4,445,312	8,757,865	82.4	1,870,127	1,052,749	458,350	2,325,545
Illinois Central System	May	6,601	12,241,177	2,269,348	15,649,006	3,094,339	2,658,783	322,835	6,072,033	13,025,683	83.2	2,623,323	1,416,586	878,129	2,684,308
	5 mos.	6,604	63,842,630	14,251,195	84,039,870	14,551,151	14,455,363	1,583,326	32,944,364	68,151,292	81.1	15,888,578	8,482,857	6,373,233	13,295,902
Illinois Terminal	May	476	435,038	138,125	639,927	109,798	89,319	23,160	278,544	530,818	82.95	109,109	58,174	35,604	116,006
	5 mos.	476	2,542,463	709,402	3,591,942	586,789	547,431	116,235	1,506,903	2,906,945	80.93	684,997	342,300	242,956	606,982
Kansas City Southern	May	890	1,864,372	222,881	2,265,803	207,779	323,706	68,544	795,938	1,509,652	66.6	756,151	283,000	382,975	620,643
	5 mos.	890	9,565,440	1,194,100	11,700,480	1,206,825	1,713,350	358,815	3,957,934	7,832,761	66.9	3,867,719	1,263,000	1,998,083	2,576,945
Kansas, Oklahoma & Gulf	May	328	302,560	1,351	306,627	40,779	26,086	13,205	86,956	180,868	59.0	125,759	37,728	57,438	89,005
	5 mos.	328	1,499,778	7,520	1,524,602	209,583	126,048	64,883	430,995	899,229	59.0	625,373	227,493	271,470	408,367
Lake Superior & Ishpeming	May	156	74,938	73	87,660	56,250	38,707	638	39,675	143,756	163.99	—56,096	10,840	—64,866	109,960
	5 mos.	156	233,267	424	257,451	184,693	214,935	3,776	163,784	609,618	236.79	—352,167	114,129	—437,642	89,818
Lehigh & Hudson River	May	96	186,189	.....	186,731	39,268	30,442	6,111	60,344	143,634	76.9	43,097	21,517	10,309	24,714
	5 mos.	96	1,063,091	.....	1,066,212	182,671	164,847	30,877	370,876	787,468	73.9	278,744	124,661	83,050	128,702
Lehigh & New England	May	190	514,437	.....	519,500	66,058	98,169	9,173	193,592	389,041	74.9	130,459	69,790	81,236	323
	5 mos.	190	2,514,446	.....	2,536,322	318,699	495,403	49,598	920,109	1,897,589	74.8	638,733	325,454	393,837	289,758
Lehigh Valley	May	1,254	4,257,501	438,355	5,032,715	733,783	755,545	141,062	2,968,807	4,792,453	95.2	240,262	555,126	—518,310	773,325
	5 mos.	1,254	21,352,727	2,970,298	26,292,928	3,369,308	3,690,213	649,142	13,160,020	22,019,953	83.7	4,272,975	2,099,224	1,226,599	1,964,775
Louisiana & Arkansas	May	756	893,270	93,096	1,023,021	116,234	134,982	34,947	362,767	693,841	67.8	329,180	122,778	130,701	248,503
	5 mos.	756	4,623,227	521,537	5,347,285	703,522	777,490	189,267	1,783,626	3,686,589	68.9	1,660,696	567,032	750,585	1,117,134
Louisville & Nashville	May	4,759	8,196,205	1,666,469	10,541,834	1,961,085	2,862,661	273,011	5,208,373	10,821,660	102.7	—279,826	94,402	—348,418	2,267,712
	5 mos.	4,758	51,145,876	10,990,322	66,443,212	9,776,539	14,674,843	1,276,101	28,075,374	56,655,741	85.3	9,787,471	6,638,942	4,831,899	10,593,814
Maine Central	May	988	1,100,562	159,131	1,348,059	297,380	314,029	21,241	625,346	1,334,363	99.0	13,696	11,881	—9,291	162,321
	5 mos.	988	7,329,678	983,323	8,805,966	1,512,261	1,600,701	79,279	3,785,475	7,264,217	82.5	1,541,749	641,298	465,294	839,491
Midland Valley	May	334	101,672	7	103,458	27,371	18,081	3,188	49,143	103,901	100.4	—443	11,633	—23,028	23,766
	5 mos.	334	620,902	115	630,632	133,326	77,590	14,638	248,172	504,224	80.0	126,408	56,805	26,372	115,825
Minneapolis & St. Louis	May	1,408	870,526	19,404	936,993	271,529	201,536	90,210	405,605	1,042,795	111.3	—105,802	50,662	—158,971	171,118
	5 mos.	1,408	5,176,184	180,847	5,614,813	1,349,409	1,032,246	427,136	2,317,252	5,487,639	97.7	127,174	368,619	—374,246	765,914
Minneapolis, St. Paul & Sault Ste. Marie	May	3,224	1,879,577	94,957	2,116,818	463,279	378,885	47,172	979,841	1,953,631	92.3	163,187	174,872	5,116	425,550
	5 mos.	3,224	8,338,998	626,785	9,718,526	2,253,575	2,070,927	228,891	5,007,110	9,978,830	102.7	—260,304	826,302	—1,008,322	522,710
Duluth, South Shore & Atlantic	May	530	292,507	7,367	320,938	68,387	67,147	13,955	138,339	297,594	92.7	23,344	20,644	3,292	32,200
	5 mos.	530	1,479,252	64,680	1,641,650	322,793	329,385	64,368	763,327	1,524,184	92.8	117,466	103,580	—36,735	224,227
Spokane International	May	152	101,318	3,120	110,230	42,187	29,146	3,644	57,527	141,059	128.0	—30,829	*49,040	9,491	19,259
	5 mos.	152	521,072	14,098	571,696	146,738	85,345	15,560	217,206	499,712	87.4	71,984	*14,333	50,517	115,738
Mississippi Central	May	158	121,852	3,233	129,045	33,165	14,057	9,822	35,984	102,471	79.4	26,574	7,148	7,801	12,111
	5 mos.	158	604,932	30,551	653,528	155,177	82,883	48,294	187,637	510,727	78.1	142,801	36,442	42,274	117,306
Missouri & Arkansas	May	365	126,194	1,507	135,883	40,803	22,952	7,022	61,970	138,878	102.2	—2,995	6,146	—26,537	—82,695
	5 mos.	365	704,779	9,817	762,979	218,149	118,473	37,318	320,578	726,041	95.2	36,938	30,660	—76,514	—125,556
Missouri-Illinois	May	172	270,333	444	273,123	40,626	33,460	5,256	84,229	170,380	62.4	102,743	46,230	46,242	39,743
	5 mos.	172	1,293,689	2,084	1,305,255	208,150	167,855	24,555	392,570	827,768	63.4	477,487	221,163	226,155	186,054
Missouri-Kansas-Texas Lines	May	3,253	3,740,201	555,337	4,720,575	803,393	780,236	213,292	2,005,641	4,048,924	85.8	671,651	274,634	168,554	448,964
	5 mos.	3,253	18,797,508	3,521,795	24,606,474	4,111,309	3,429,567	1,001,695	9,791,890	19,687,280	80.0	4,919,194	2,114,497	1,817,770	3,240,495
Missouri Pacific	May	7,080	9,738,627	1,422,097	12,277,356	1,749,808	2,531,458	356,551	5,376,399	10,590,611	86.3	1,686,745	837,206	302,422	2,727,041
	5 mos.	7,080	53,262,057	8,987,800	68,214,752	9,917,625	12,759,546	1,731,016	27,578,259	54,992,483	80.6	13,222,269	4,274,450	5,980,778	14,147,164
Gulf Coast Lines	May	1,734	3,298,517	134,453	3,579,013	652,716	367,063	60,468	1,205,816	2,385,634	66.6	1,193,379	240,200	642,443	632,639
	5 mos.	1,734	16,155,055	1,102,327	17,961,644	2,881,022	1,753,673	324,558	5,209,289	10,639,565	59.23	7,322,079	1,814,873	3,922,378	3,088,020
International-Great Northern	May	1,110	1,819,856	303,281	2,360,125	527,675	369,684	43,938	1,006,262	2,065,758	87.5	294,367	107,299	—38,906	314,898
	5 mos.	1,110	8,038,557	1,583,804	10,817,987	2,369,834	1,738,364	215,171	4,496,861	9,365,940	86.6	1,452,047	529,084	61,431	1,524,813
Monongahela	May	170	259,572	1,740	264,252	38,771	21,298	913	109,395	175,149	66.3	89,103	62,455	2,876	31,596
	5 mos.	170	2,092,843	8,888	2,117,423	311,479	224,715	3,643	711,475	1,273,827	60.2	843,596	332,373	141,055	396,718

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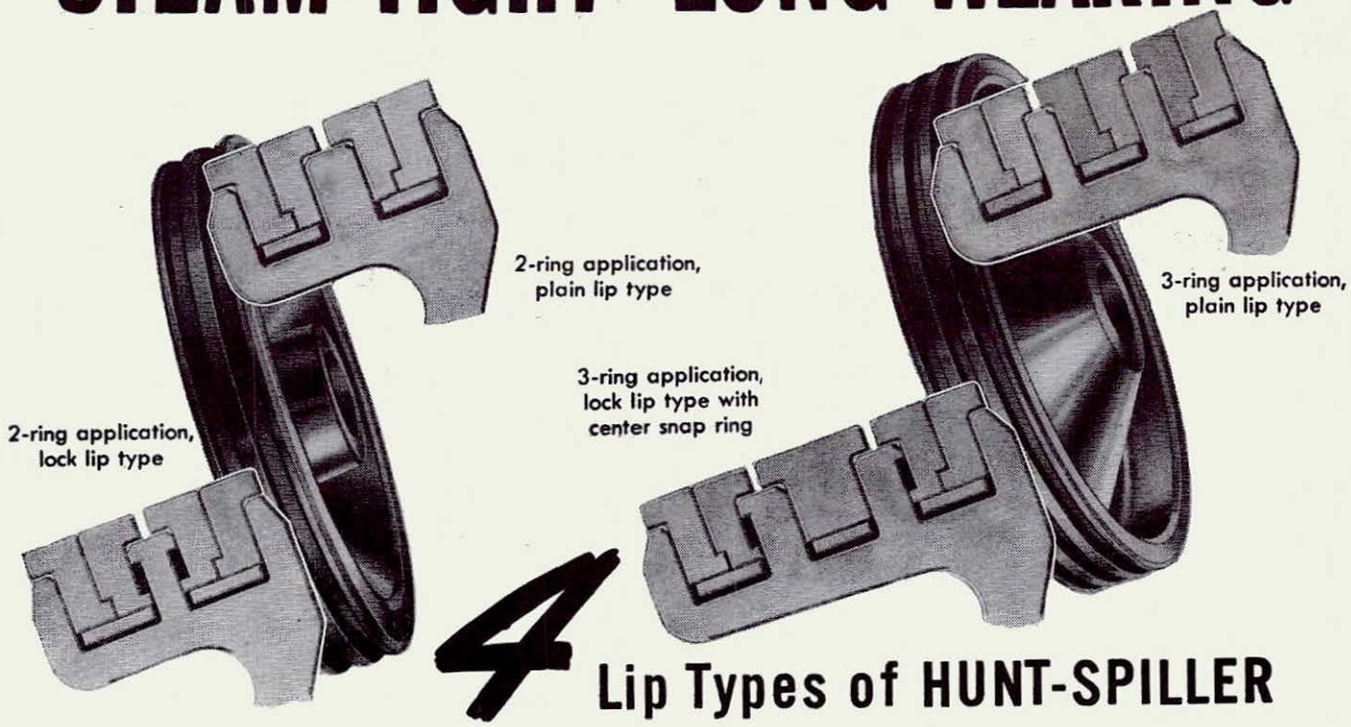
STEAM-TIGHT LONG-WEARING


2-ring application, plain lip type
3-ring application, plain lip type
3-ring application, lock lip type with center snap ring
2-ring application, lock lip type

4 Lip Types of HUNT-SPILLER Duplex Sectional Packing for Better Light-Weight Steel Piston Performance . . .

HUNT-SPILLER packing rings fit four light weight piston types and may be had in gun iron, combination gun iron and bronze, and all-bronze. Each is cast and machined to exacting standards of control, quality, and precision which have identified HUNT-SPILLER products for 136 years. You can depend upon them. Also HUNT-SPILLER Duplex Sectional Lock Lip Type valve packing rings.

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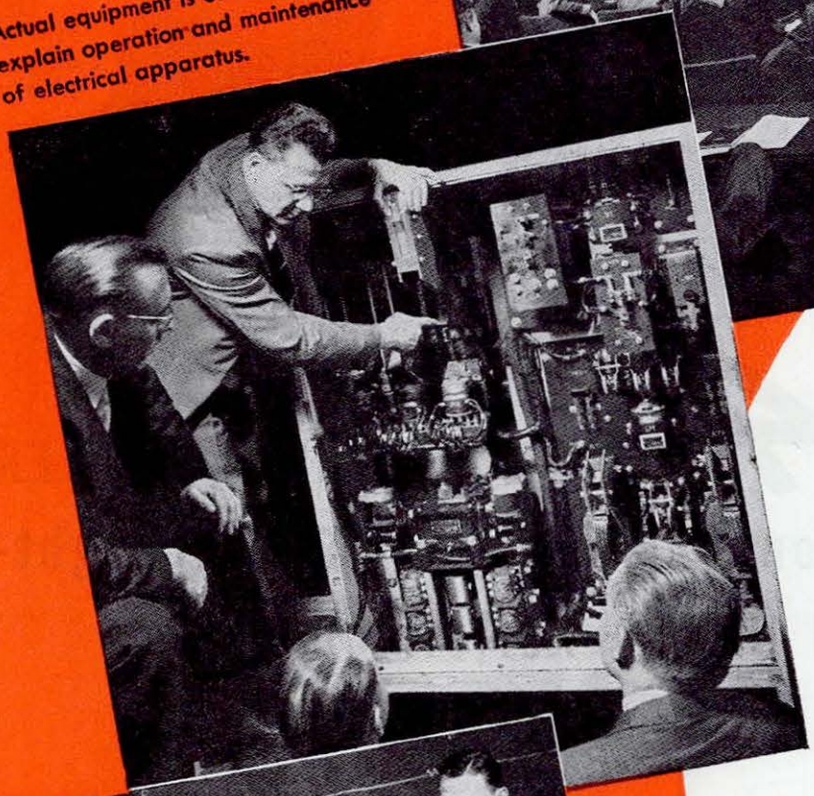
HUNT-SPILLER

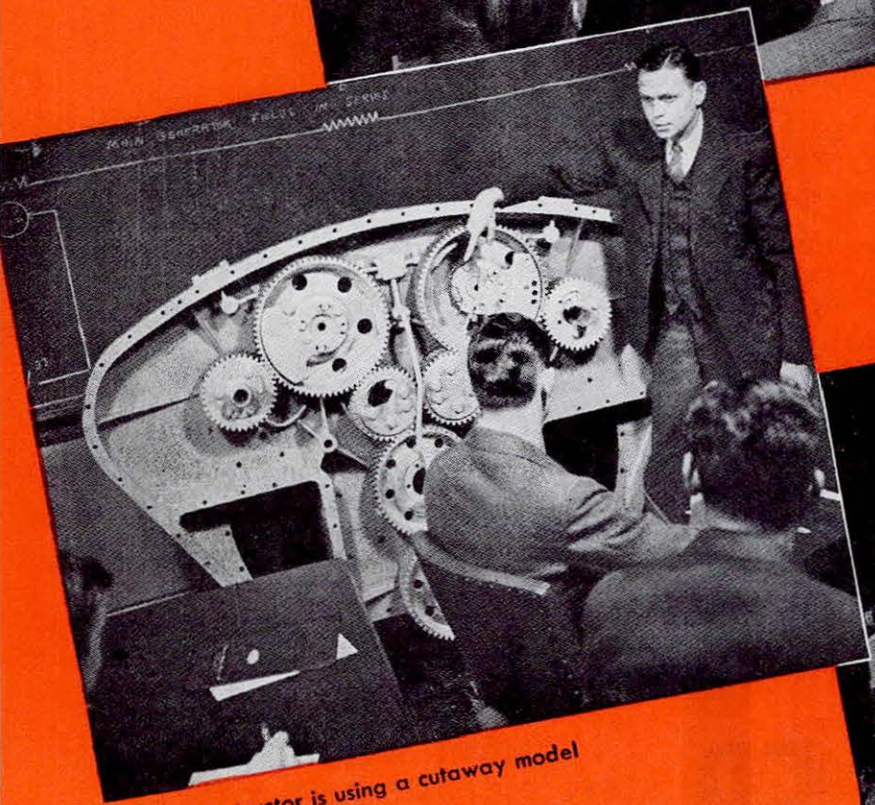
LIGHT WEIGHT
STEEL PISTONS AND VALVES
DUPLEX SECTIONAL PACKING
AIR FURNACE GUN IRON

The School in Session

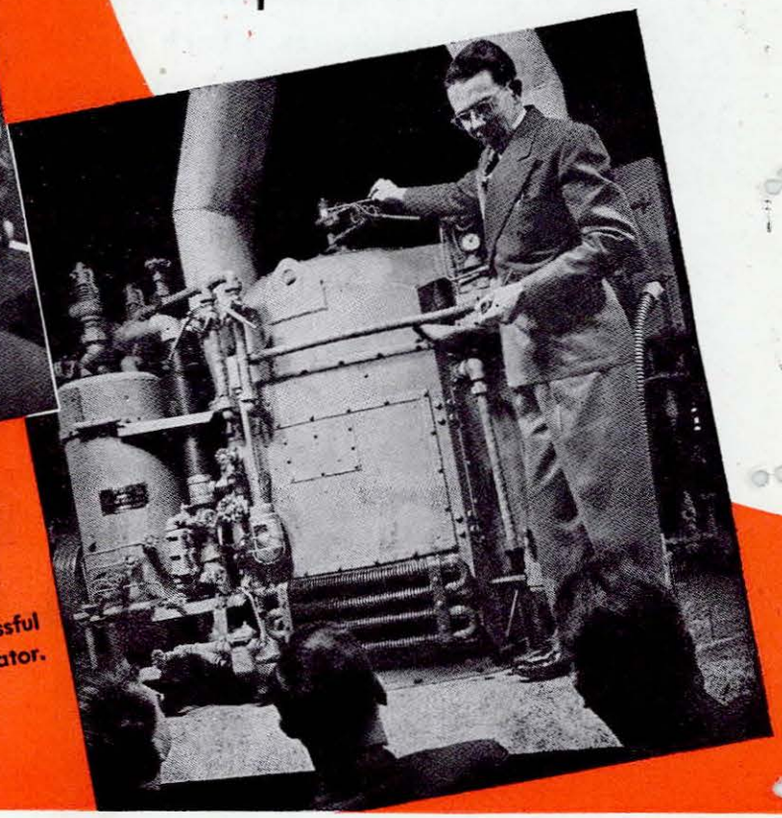
A typical classroom session.



Actual equipment is often used to explain operation and maintenance of electrical apparatus.



Here the instructor is using a cutaway model to explain engine timing.



A very important factor in successful locomotive operation is the steam generator.

We Gladly Shoulder Our Share Of This Load

TO build into your General Motors Diesel locomotives all the quality and performance that Electro-Motive research, experiment and experience have made possible is only the beginning of our responsibility to you. Our next is to do everything within our power to help you keep them running at peak performance.

Now, with the completion of the new Service Building at La Grange — with additional instructors, classroom facilities and equipment, the Electro-Motive Diesel Locomotive School is in a better position than ever to aid in training the supervisory personnel of our customer-railroads.

This is, of course, in addition to the services offered by our Instruction Car which travels on American railroads giving maintenance and operation courses to all classes of personnel.

We cannot too emphatically stress the value of the instruction given in a two-weeks' course at the School, especially in the development of lower maintenance and operating costs.

For detailed information, including day-by-day outline of the program, write Mr. D. H. Queeney, Service Manager, Electro-Motive Division, General Motors, La Grange, Ill.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS LA GRANGE, ILL.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1946

Name of Road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1946	Net railway operating income 1945
Montour	May	51	$79,725	.....	$79,972	$24,308	$43,734	$1,099	$29,518	$107,462	134.4	—$27,490	$1,631	—$7,881	$78,584
	5 mos.	51	813,294	.....	818,121	106,220	307,703	7,188	334,728	800,025	97.8	18,096	106,675	90,011	253,871
Nashville, Chattanooga & St. Louis	May	1,053	1,681,306	$281,993	2,124,356	483,025	500,428	98,796	1,015,762	2,203,525	103.7	—79,169	204,976	—294,092	215,815
	5 mos.	1,053	9,012,374	1,943,277	12,047,050	2,557,262	2,687,557	492,059	5,428,529	11,643,596	96.7	403,454	837,475	—470,691	2,250,114
New York Central	May	10,746	26,560,983	10,678,204	41,402,024	6,126,242	8,882,052	894,188	20,574,427	38,883,588	93.9	2,518,436	2,036,317	—707,868	5,999,066
	5 mos.	10,746	153,912,181	60,035,892	236,662,834	35,230,170	51,947,437	4,391,164	115,541,506	220,327,527	93.1	16,335,307	9,002,050	—91,664	22,461,601
Pittsburgh & Lake Erie	May	229	1,411,354	79,607	1,576,155	283,619	666,382	60,613	772,471	1,917,730	121.7	—341,575	63,899	210,876	530,740
	5 mos.	229	8,248,293	450,047	9,104,533	1,712,239	3,986,658	260,908	4,760,435	11,372,049	124.9	—2,267,516	234,066	612,663	1,957,936
New York, Chicago & St. Louis	May	1,687	4,981,245	222,214	5,291,696	831,350	982,590	172,581	2,261,093	4,481,075	84.7	810,621	353,842	247,838	1,973,768
	5 mos.	1,687	26,032,168	1,357,528	28,002,494	4,189,772	5,031,756	859,770	12,097,943	23,336,205	83.3	4,666,289	1,819,428	1,448,866	7,583,569
New York, New Haven & Hartford	May	1,843	5,733,878	4,518,943	11,104,944	2,041,043	1,940,719	219,854	5,287,026	10,367,669	93.4	737,275	935,000	—1,343,006	1,780,935
	5 mos.	1,840	29,823,767	25,121,375	59,852,307	9,467,755	9,722,382	1,039,505	27,256,285	51,766,555	86.5	8,085,752	4,303,500	—1,591,133	8,010,066
New York Connecting	May	21	165,493	.....	162,043	64,698	13,539	.....	54,345	134,683	83.1	27,360	59,394	31,561	181,916
	5 mos.	21	865,139	.....	884,422	257,985	83,548	.....	301,233	651,811	73.7	232,611	302,220	445,836	747,828
New York, Ontario & Western	May	547	465,067	3,759	542,813	89,619	114,321	27,180	310,937	572,155	105.4	—29,343	38,652	—138,892	—59,462
	5 mos.	547	2,399,367	18,153	2,790,518	434,310	539,610	127,460	1,615,123	2,864,865	102.7	—74,347	194,035	—615,312	—797,604
New York, Susquehanna & Western	May	120	233,187	37,204	277,524	37,590	41,199	5,616	136,520	238,757	86.0	38,767	37,301	—29,216	74,006
	5 mos.	120	1,398,518	204,363	1,667,029	159,000	175,851	24,261	749,084	1,196,270	71.8	470,759	193,548	16,666	277,622
Norfolk & Western	May	2,161	6,600,176	710,253	7,598,874	1,299,226	1,789,380	199,798	2,705,304	6,387,121	84.1	1,211,753	947,540	802,996	2,146,790
	5 mos.	2,161	41,277,607	5,175,553	47,980,217	7,157,398	10,957,510	1,009,666	15,865,272	36,915,239	76.9	11,064,978	8,046,855	6,951,387	10,725,318
Norfolk Southern	May	727	484,895	6,802	512,432	164,374	82,095	34,296	261,185	577,086	112.6	—64,654	40,694	—136,184	51,434
	5 mos.	727	2,902,869	69,379	3,076,541	830,539	406,392	171,354	1,246,619	2,826,779	91.9	249,762	201,378	—134,568	227,340
Northern Pacific	May	6,872	6,822,972	1,164,037	8,786,583	1,817,846	2,077,371	222,566	3,700,462	8,418,414	95.8	368,169	889,630	7,603	1,927,435
	5 mos.	6,872	36,777,025	7,320,916	48,784,686	9,281,865	10,426,763	1,052,501	20,044,797	43,895,664	90.0	—4,889,022	4,521,251	2,343,520	7,852,106
Northwestern Pacific	May	331	276,637	7,102	301,422	137,064	59,966	2,889	200,186	409,138	135.7	—107,716	25,257	—155,677	82,807
	5 mos.	331	1,490,030	33,158	1,622,961	820,791	318,611	15,983	935,974	2,135,765	131.6	—512,804	138,882	—761,588	223,059
Oklahoma City-Ada-Atoka	May	132	81,066	.....	82,336	19,344	*8	1,568	20,333	45,599	55.4	36,737	12,882	9,939	21,684
	5 mos.	132	410,145	1	426,388	105,060	19,184	6,480	120,005	270,454	63.4	155,934	46,720	45,464	92,850
Pennsylvania	May	10,121	33,992,834	15,125,519	53,459,677	8,856,846	14,717,169	1,480,946	29,286,898	57,255,540	107.1	3,795,863	3,577,372	—7,853,973	13,465,189
	5 mos.	10,121	195,638,775	91,139,163	312,097,365	39,395,423	76,540,246	6,506,372	159,278,786	297,600,010	95.4	14,497,355	18,922,989	6,762,096	52,615,680
Long Island	May	376	1,032,436	2,245,684	3,444,908	390,861	589,515	24,566	1,822,460	2,902,003	84.2	542,905	424,330	—180,643	155,749
	5 mos.	376	5,294,096	10,903,435	17,163,343	2,104,970	2,693,943	81,356	9,350,439	14,619,251	85.2	2,544,092	2,137,421	—989,423	44,875
Pennsylvania-Reading Seashore Lines	May	390	444,897	287,223	754,844	167,338	98,348	9,319	458,339	759,939	100.7	—5,095	90,967	—207,149	—52,471
	5 mos.	390	2,002,145	1,311,232	3,445,506	844,331	536,274	40,112	2,352,524	3,905,310	113.3	—459,804	461,678	—1,435,481	—672,514
Pere Marquette	May	1,949	2,978,181	120,557	3,290,030	591,156	828,613	96,715	1,584,109	3,315,992	100.8	—25,962	224,515	—351,414	787,285
	5 mos.	1,949	16,431,057	918,917	18,295,635	3,060,619	3,956,234	478,061	8,496,427	16,995,748	92.9	1,299,887	1,258,357	—425,795	3,396,602
Pittsburg & Shawmut	May	97	90,160	.....	91,148	19,120	17,451	2,251	28,533	73,128	80.2	18,020	4,680	10,508	26,076
	5 mos.	97	534,229	.....	538,726	111,020	122,356	11,918	179,145	456,063	84.7	82,663	21,705	41,532	104,790
Pittsburgh & West Virginia	May	136	311,734	.....	329,762	63,636	72,747	27,997	104,491	301,402	91.4	28,360	26,128	14,664	187,684
	5 mos.	136	1,548,151	.....	1,643,313	334,290	414,131	137,173	590,452	1,622,931	98.8	20,382	136,222	18,945	1,037,181
Pittsburg, Shawmut & Northern	May	190	46,416	.....	46,905	15,439	11,861	1,146	29,496	63,911	136.3	—17,006	5,195	—32,276	—395
	5 mos.	190	344,425	.....	347,919	84,190	71,843	5,313	183,398	375,044	107.8	—27,125	27,781	—96,829	37,488
Reading	May	1,362	6,207,597	728,699	7,314,193	1,598,151	1,372,036	99,643	3,248,291	6,558,159	89.7	756,034	534,101	255,443	1,192,549
	5 mos.	1,362	33,493,687	4,797,399	40,274,589	6,725,653	8,421,570	508,502	17,867,110	34,764,049	86.3	5,510,540	3,269,275	1,978,340	5,608,243
Richmond, Fredericksburg & Potomac	May	118	1,267,820	631,266	2,032,122	287,996	305,482	18,959	844,888	1,552,089	76.4	480,033	232,040	108,911	202,474
	5 mos.	118	5,863,679	4,694,803	11,421,724	1,483,893	1,507,022	85,980	4,230,444	7,868,853	68.9	3,552,871	1,541,684	1,361,183	962,838
Rutland	May	407	274,872	35,158	375,119	66,614	72,929	11,705	206,622	373,785	99.6	1,334	26,017	—31,935	42,119
	5 mos.	407	1,497,260	221,094	2,038,238	332,554	431,868	63,315	1,156,047	2,062,358	101.2	—24,120	133,314	—196,648	—167,165
St. Louis-San Francisco	May	4,645	4,841,381	1,089,123	6,482,500	1,309,380	1,708,126	195,635	3,081,759	6,653,474	102.6	—170,974	488,812	—570,749	1,519,605
	5 mos.	4,645	27,039,410	6,230,023	36,427,254	7,326,624	8,677,068	980,876	16,454,522	35,365,101	97.1	1,062,153	2,699,265	—1,291,446	7,417,146
St. Louis, San Francisco & Texas	May	160	292,941	19,480	321,985	43,279	41,760	11,937	132,202	237,177	73.7	84,808	12,025	46,519	52,166
	5 mos.	160	1,275,746	108,787	1,435,761	227,514	191,586	61,939	641,197	1,163,535	81.0	272,226	66,363	68,773	166,605

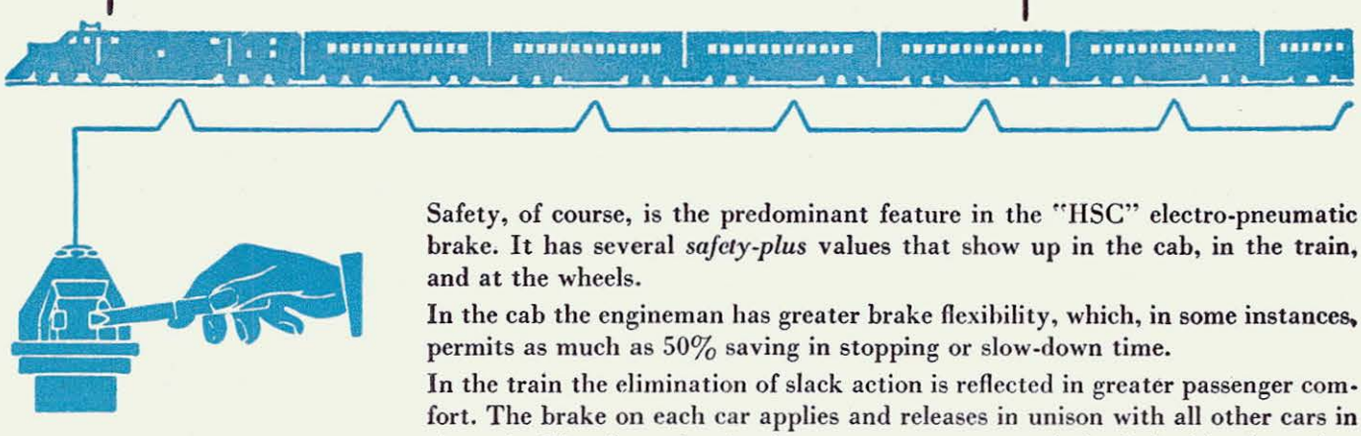
Table continued on next left-hand page

Safety-*Plus* Values

with HSC

Electro-Pneumatic Brake

Brake Action is Simultaneous and Uniform on Each Car



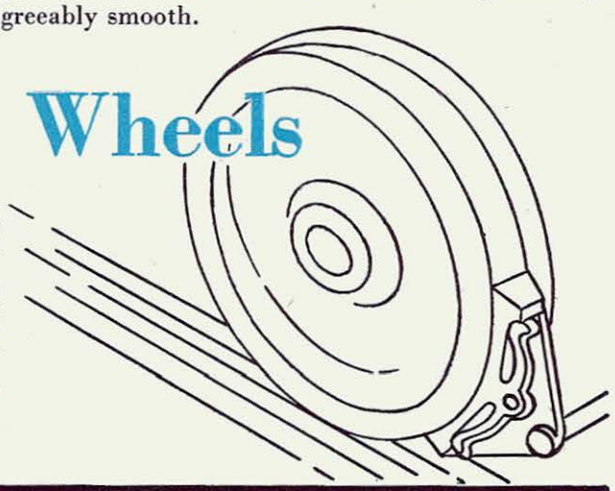
Safety, of course, is the predominant feature in the "HSC" electro-pneumatic brake. It has several *safety-plus* values that show up in the cab, in the train, and at the wheels.

In the cab the engineman has greater brake flexibility, which, in some instances, permits as much as 50% saving in stopping or slow-down time.

In the train the elimination of slack action is reflected in greater passenger comfort. The brake on each car applies and releases in unison with all other cars in the train. There's no time lag from car to car — no variation in braking intensity. Slow downs and stops are agreeably smooth.

Safety-*Plus* at the Wheels

With the highly efficient "HSC" brake the *safety-plus* values show up sharply at the wheels. Shorter braking periods at lower pressures generally prevail. Reduced shoe wear — (up to 35% as reported in one instance) — also reduces the danger of thermal checks in wheels. And the "AP" mechanical Decelostat, by detecting wheel slip and keeping the wheels rolling, attains the maximum in *safety-plus* protection at the wheels.



WESTINGHOUSE AIR BRAKE CO.

WILMERDING, PENNSYLVANIA

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1946

Name of Road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1946	Net railway operating income 1945
St. Louis Southwestern Lines	May	1,575	$3,159,222	$153,110	$3,432,897	$618,199	$558,917	$133,387	$1,394,849	$2,857,197	83.2	$575,700	$177,242	$245,646	$1,022,706
	5 mos.	1,575	16,754,111	797,202	18,240,482	3,412,772	3,026,830	594,408	6,032,950	13,821,044	75.8	4,419,438	1,479,597	2,205,820	4,803,808
Seaboard Air Line	May	4,150	6,925,062	1,368,465	8,776,042	1,550,693	1,662,364	273,078	3,883,004	7,831,162	89.2	944,880	198,886	346,085	1,409,274
	5 mos.	4,150	35,715,538	10,888,567	49,854,890	8,095,978	8,408,250	1,371,191	19,395,781	39,705,597	79.6	10,149,293	3,011,473	4,976,963	8,235,701
Southern Railway	May	6,484	11,864,752	2,258,387	15,090,026	3,024,401	2,883,987	309,756	6,696,936	13,497,302	89.4	1,592,724	768,987	470,097	2,829,287
	5 mos.	6,484	63,949,334	16,609,265	86,572,991	14,400,994	16,035,687	1,547,820	34,585,045	70,228,504	81.1	16,344,487	7,374,715	7,032,808	14,120,169
Alabama Great Southern	May	315	855,924	120,515	1,037,693	206,727	298,240	23,219	467,038	1,042,445	100.5	—4,752	52,201	—65,937	100,023
	5 mos.	315	4,141,756	1,269,128	5,789,753	1,056,935	1,415,185	126,599	2,285,573	5,170,481	89.3	619,272	433,314	105,063	780,605
Cincinnati, New Orleans & Texas Pacific	May	337	1,915,451	178,314	2,216,980	319,901	461,322	39,306	854,929	1,746,310	78.8	470,670	252,682	258,381	390,321
	5 mos.	337	8,846,104	1,826,785	11,405,324	1,563,519	2,699,722	203,328	4,104,382	9,046,152	79.3	2,359,172	1,279,177	1,296,941	1,920,822
Georgia Southern & Florida	May	397	296,871	60,924	395,885	92,913	78,618	6,039	180,635	371,078	93.7	24,807	6,425	—11,348	63,142
	5 mos.	397	1,636,714	552,771	2,417,511	469,539	355,982	29,974	991,511	1,927,926	79.7	489,585	170,915	154,932	341,656
New Orleans & Northeastern	May	204	501,101	84,076	626,088	145,198	81,810	12,280	235,022	504,733	80.6	121,355	39,429	13,667	93,947
	5 mos.	204	2,521,961	699,166	3,434,657	707,265	446,237	67,043	1,092,941	2,500,101	72.8	934,556	364,774	260,658	558,478
Southern Pacific	May	8,246	21,757,150	5,385,279	29,604,580	4,954,516	6,291,674	807,683	13,634,541	27,979,394	94.5	1,625,186	*2,350,729	2,477,636	3,086,148
	5 mos.	8,246	106,176,092	33,637,581	154,216,019	25,377,502	35,005,624	3,753,676	65,698,500	141,409,320	91.7	12,806,699	*671,272	8,154,836	15,242,471
Texas & New Orleans	May	4,322	6,355,501	1,168,432	8,075,353	1,665,700	1,538,632	195,855	3,312,582	7,153,109	88.6	922,244	*170,377	636,602	1,542,200
	5 mos.	4,322	31,635,614	7,647,259	42,269,328	7,893,005	7,357,583	895,281	15,652,710	33,962,204	80.3	8,307,124	697,902	5,392,812	6,039,891
Spokane, Portland & Seattle	May	944	1,100,838	73,252	1,259,666	557,457	190,005	16,057	556,983	1,389,438	110.3	—129,772	—4,811	—188,921	521,403
	5 mos.	944	6,284,987	507,170	7,318,383	2,382,210	943,810	85,377	2,875,633	6,634,890	90.7	683,493	370,117	—162,956	1,504,181
Tennessee Central	May	286	236,076	12,222	259,740	45,407	42,500	6,913	114,711	224,427	86.4	35,313	26,077	—7,063	8,000
	5 mos.	286	1,212,291	89,505	1,383,625	262,057	258,166	33,300	590,387	1,215,397	87.8	168,228	119,770	—27,373	158,798
Texas & Pacific	May	1,874	3,393,379	865,810	4,663,185	747,145	739,726	137,780	1,609,374	3,519,310	75.5	1,143,875	341,964	624,139	786,306
	5 mos.	1,874	15,576,298	5,038,187	22,863,690	3,537,905	3,551,776	672,271	7,756,942	16,999,433	74.4	5,864,257	1,842,826	3,261,152	3,453,897
Texas Mexican	May	162	172,252	358	194,104	76,975	19,407	5,297	57,432	169,841	87.5	24,263	20,261	—19,074	67,044
	5 mos.	162	855,405	1,958	966,980	266,106	108,802	23,096	281,567	734,991	76.0	231,989	98,761	63,717	45,743
Toledo, Peoria & Western	May														
	5 mos.														
Union Pacific System	May	9,775	18,185,133	5,336,117	25,816,894	3,912,310	5,392,078	722,458	9,594,485	21,474,555	83.2	4,342,339	2,389,153	1,264,758	4,068,047
	5 mos.	9,776	96,562,833	29,387,886	139,459,361	19,130,294	28,153,684	3,261,756	52,613,218	112,717,749	80.8	26,741,612	13,587,032	9,792,070	15,563,199
Utah	May	111	55,888	.....	55,897	17,805	23,413	637	23,615	71,303	127.6	—15,406	10,444	—17,370	8,989
	5 mos.	111	556,056	.....	556,421	94,915	183,338	3,297	210,812	518,405	93.2	38,016	56,379	—5,628	61,741
Virginian	May	661	1,308,979	6,340	1,342,430	238,544	559,797	30,521	444,321	1,336,308	99.5	6,122	68,700	—3,129	1,026,998
	5 mos.	661	9,159,407	36,249	9,483,630	1,289,455	2,901,889	157,282	2,475,367	7,144,620	75.3	2,339,010	1,410,400	1,569,254	3,724,234
Wabash	May	2,393	5,048,542	550,638	6,024,057	1,151,626	1,019,889	210,916	2,609,755	5,272,653	87.5	751,404	—81,331	461,016	805,884
	5 mos.	2,393	25,844,351	3,333,457	31,335,121	4,807,458	5,008,547	1,014,185	13,766,890	26,029,982	83.1	5,305,139	1,109,874	2,529,330	4,224,674
Ann Arbor	May	294	431,854	4,697	450,047	77,480	103,668	17,467	216,471	429,866	95.5	20,181	16,542	—7,752	83,776
	5 mos.	294	2,369,982	28,479	2,451,440	324,786	477,412	93,611	1,215,776	2,181,054	89.0	270,386	141,828	61,546	297,582
Western Maryland	May	839	1,875,144	25,963	1,988,439	248,549	412,107	56,091	701,201	1,528,801	76.9	459,638	235,000	290,268	465,919
	5 mos.	839	11,138,999	195,157	11,876,433	1,678,531	2,419,664	292,344	4,282,101	9,247,781	77.9	2,628,652	1,235,000	1,598,602	2,794,392
Western Pacific	May	1,195	2,316,487	494,498	2,925,113	494,389	617,199	107,828	1,244,549	2,634,851	90.1	290,262	168,923	73,834	534,216
	5 mos.	1,195	12,343,346	3,551,411	16,506,417	2,703,833	2,858,646	560,091	6,184,928	13,184,682	79.9	3,321,735	1,470,473	1,409,979	2,726,446
Wheeling & Lake Erie	May	505	1,227,089	.....	1,271,101	272,640	272,662	48,270	509,184	1,160,408	91.3	110,693	182,979	117,191	320,460
	5 mos.	505	6,711,946	13	6,918,323	1,114,975	1,651,691	246,696	2,815,136	6,128,162	88.6	790,161	1,025,423	685,527	1,550,744
Wisconsin Central	May	1,051	1,416,463	56,526	1,617,721	273,160	291,528	47,326	731,776	1,412,571	87.3	205,150	*86,730	148,150	254,558
	5 mos.	1,051	7,606,417	466,328	8,850,193	1,208,380	1,512,761	233,871	4,247,569	7,545,854	85.3	1,304,339	379,199	243,838	1,110,546

* Credit.

Current Publications

ARTICLES IN PERIODICALS

Freedom Within Management, by Wm. B. Given, Jr. Harvard Business Review, Summer Number, 1946, pp. 427-437.

Mr. Given, who is president of the American Brake Shoe Company, describes what he calls "from-the-bottom-up" management as differentiated from "from-the-top-down" management. Under "top-down" management the head of a business does practically all the topside thinking and planning, and issues orders to those under him. Under "bottom-up" management the head of a business, or of a division or department, tries to release the thinking of every individual under him and to encourage personal initiative all through the organization. He discusses "progressive" decentralization, freedom to fail, budgetary procedure, teaching rather than telling, creative effort, managerial requirements, and selection and training.

BOOKS

Locomotive Puffs from the Back Shop, by Leon R. Harris. 56 pages. Published by Bruce Humphries, Inc., 30 Winchester St., Boston, Mass. Price, $2.00.

A book of railroad verse depicting the work of the repair shops and round houses. Many of the poems have appeared in railroad magazines. The author is employed by the Rock Island System.

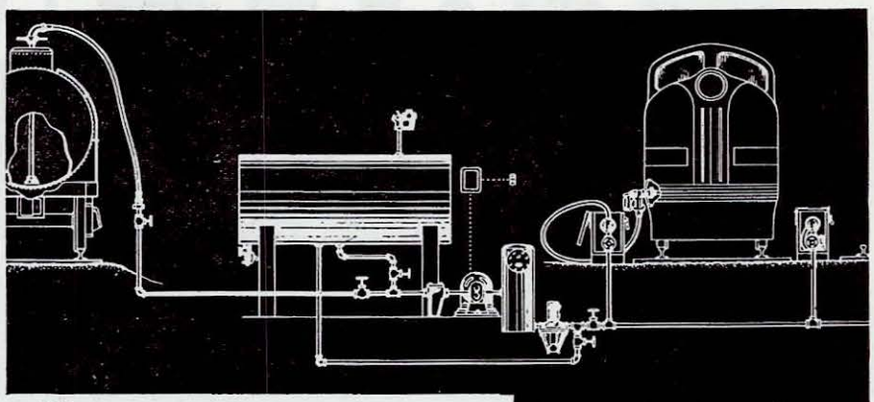
Our Oil Resources, edited by Leonard M. Fanning. 331 pages. Published by the McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 18, N. Y. Price, $5.00.

Eighteen outstanding authorities and oil company executives have contributed to this symposium, which constitutes a study of our oil resources in terms of geographical knowledge, as well as of human resources—engineering and scientific learning, and private initiative and incentive. The book traces the part of private enterprise in the development of U. S. oil resources, analyzes considerations such as conservation, the role of technology, oil, natural gas, coal and shale reserves, oil in public domain, naval reserves, capital employed in the petroleum and American oil industries and discusses the subject of American oil companies in foreign oil operations.

Diesel-Electric Locomotive, by Charles F. Foell and M. E. Thompson. 658 editorial pages, illustrations. Published by Diesel Publications, Inc., 192 Lexington Ave., New York 16, N. Y. Price, $7.00 in U. S., $8.00 elsewhere.

The purpose of this book is to give a factual, instructive presentation of the Diesel-electric locomotive; its history, advantages, engineering, construction, operation, general principles of maintenance, and selection to meet various conditions of expected use. It does not include detailed descriptions of the locomotives now being produced or already in operation. Its appeal is to those who, knowing little about the subject, wish to acquaint themselves with the rudiments of it.

FUELING by BOWSER SYSTEMS...



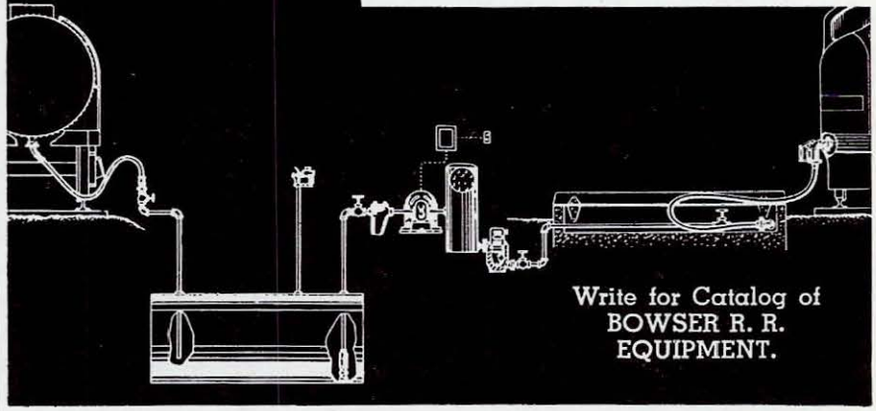
BOWSER FUELING SYSTEMS CUT COSTS 3 WAYS

1. Eliminate shrinkage. Meter readings may be automatically compensated to delivery temperature.
2. Printed delivery slips permit accurate cost accounting on individual units. Check shortages.
3. Bowser filtered fuel cuts repair and servicing time.

.... combination tank car unloading and locomotive fueling system utilizing the same power pump and metering equipment. Fuel is drawn from a tank car and delivered by pump to storage tank. Fueling connections and hose are in an above-ground box with cover.

.... bulk unloading system where liquid flows by gravity from a tank car. The fueling system, including a strainer, air release and Bowser meter, provides accurately measured and recorded deliveries of fuel to each unit.

BOWSER RAILROAD REPRESENTATIVES ..... will be pleased to discuss your fueling problems and help solve them according to proven engineering principles. Without obligation, call Bowser for information on your liquid handling problems.



Write for Catalog of BOWSER R. R. EQUIPMENT.

A Complete Line of Liquid-Handling Systems for Railroads

- Fueling systems designed for your individual needs.
- Proportioning and blending systems of absolute accuracy.
- Selective lubrication systems for all types of machinery.
- Precise metering and accounting systems for liquids.
- Complete storage and dispensing systems for railroads.

BOWSER, INC. • 1321 CREIGHTON AVE. • FORT WAYNE 2, INDIANA

COLGATE

"ENGINEERED SERVICE," FACILITIES AND SKILL IN

Aluminum, Magnesium and Stainless Steel

give you economical, precision fabricated and assembled parts like this . . . . .

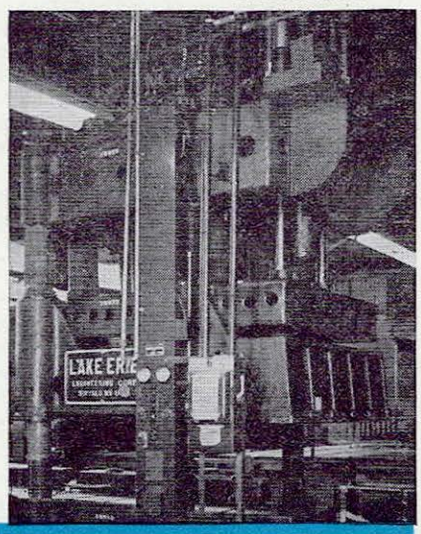
This precision fabricated assembly demonstrates COLGATE'S specialized "know-how," engineering ingenuity, and complete facilities for working with the light metals. Simple as it looks, the end use of this assembly necessitated the creation of positive tooling in order to attain the exact interchangeability required, as well as overcome the problems concerned with stamping, forming and welding operations — all of which were solved *before* mass production was started. This was accomplished by continuous "Engineered Service" conferences resulting in the saving of time, money and materials and the delivery of a quality product on time.

From the rough-idea stage to final assembly, COLGATE can help solve your problem of developing new products, improving old ones, substituting light metals for other materials. COLGATE can supply the "know-how" for special parts fabrication and assembly and in essence give you additional plant facilities without investment. COLGATE'S specialized experience, complete and centralized facilities, latest mass-production assembly techniques all contribute to meet your exacting specifications and delivery dates. Where blueprints are already prepared we will fabricate and assemble parts to your specifications.

Let COLGATE show you how these sales-creating product features — *light weight, increased strength, durability, added beauty and improved performance* can make light metals a desirable substitute for heavier materials. Learn how COLGATE'S "Engineered Service", facilities and skills can help make your product faster, better, more economically. Your inquiry is invited, prompt attention and complete confidence assured.

COLGATE has a variety of hydraulic presses ranging from 10 to 750 ton capacity and mechanical presses from 2½ to 200 tons capacity. Complete and centralized facilities for—

STAMPING	WELDING
FORMING	FINISHING
DRAWING	ASSEMBLING



COLGATE *Aircraft Corporation*

AMITYVILLE, LONG ISLAND . . . NEW YORK

LIGHT METAL PRODUCTS DIVISION

"AB" BRAKE

Symbols of PROGRESS

IN KEEPING with the many notable advances made in the design and operation of rolling stock it is very significant that much of the modern equipment is equipped with the "AB" Brake. These advances go forward hand in hand and are very definite symbols of progress.

By providing a faster, more positive and more effective brake operation the "AB" Brake has made possible higher speeds, heavier tonnage trains and record-breaking freight shipments with a minimum amount of freight cars.

Improved retardation control, made possible by the "AB" Brake has played a very important part in the sensational increase of ton miles per car and per locomotive.

Future plans should include general application on all cars to insure greater progress in freight train operation and maximum net revenues.

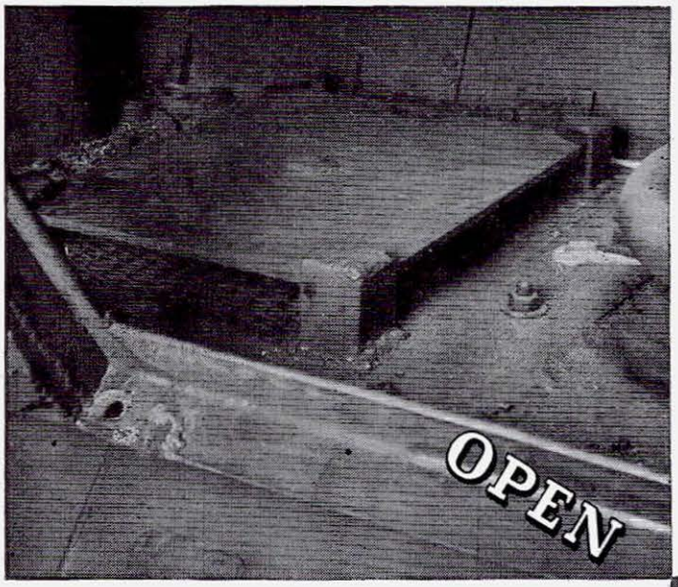
The New York Air Brake Company

420 Lexington Ave., New York 17, N.Y. Plant: Watertown, N.Y.

Reduce Power Failures with

AMWELD CLEANING PORTS FOR SMOKEBOX NETTING

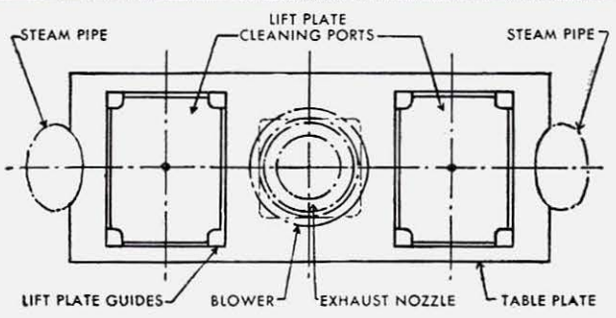
— PATENTED —



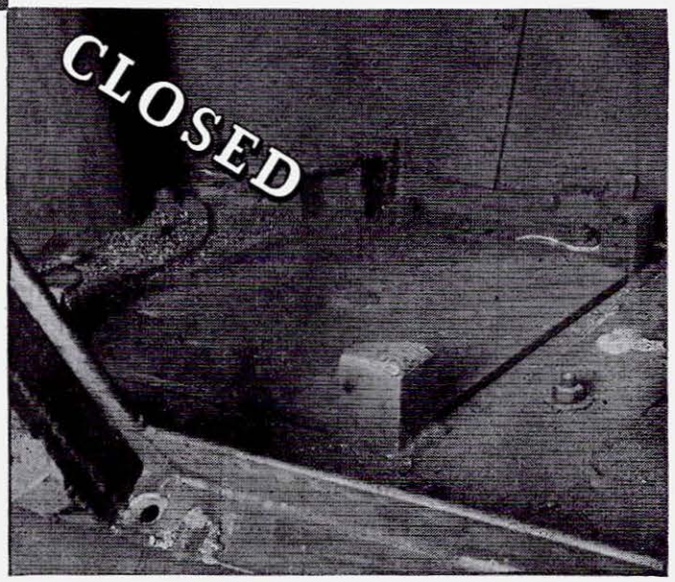
The application of AMWELD Cleaning Ports, complete with Spark Arrestor Netting, in the table plate of conventional front end arrangements is an improved and effective method of insuring adequate draft under all operating conditions.

The fully automatic action of the AMWELD Cleaning Ports will clean the front end netting and restore the normal draft with no attention from the engine crew.

For more detailed information, please write us.



PLAN OF TABLE PLATE



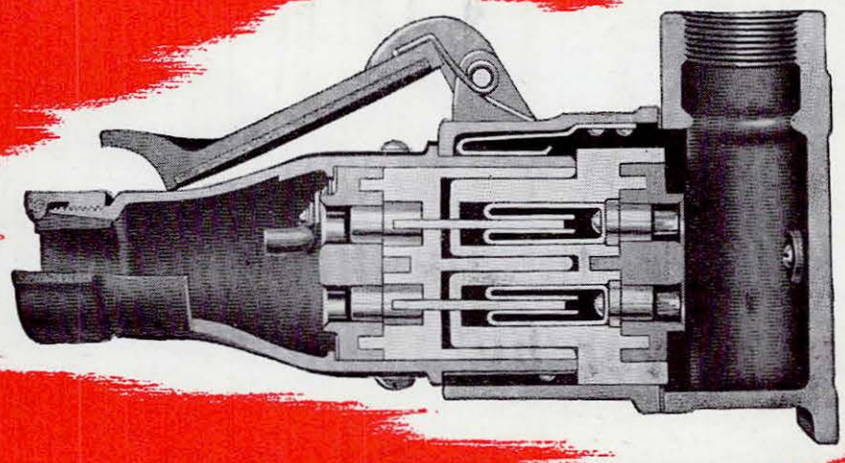
SOME ADVANTAGES REPORTED BY RAILROADS USING AMWELD CLEANING PORTS FOR SMOKEBOX NETTING:

1. ELIMINATION OF PLUGGING
2. REDUCTION IN MAINTENANCE
3. INCREASE IN EFFICIENCY
4. AUTOMATIC OPERATION

RAILWAY EQUIPMENT DIVISION

THE AMERICAN WELDING & MANUFACTURING CO.

WARREN, OHIO



Section view: Note long distances from contact to contact and from contacts to ground.

QUELARC

The circuit breaking plugs and receptacles . . . ratings up to 200 amperes

Pyle-National plugs and receptacles are built to stand up in railroad service, delivering dependable service with minimum maintenance. The exclusive QuelArc construction provides exceptional protection to contacts, for safe use as current rupturing devices. In the section view, note the complete enclosure of all contacts in insulating chambers which form an arc-trapping space. Note also the long distances from contact to contact and from contacts to ground. Contacts are individually renewable. Full ground protection is provided.

QuelArc plugs and receptacles are available in a complete range of styles, 2, 3, 4 wire types; ratings 20, 30, 60, 100, and 200 amperes. Many other types available for portable tools and control and instrument circuits. Write for general catalog 1100 with listings of all types.

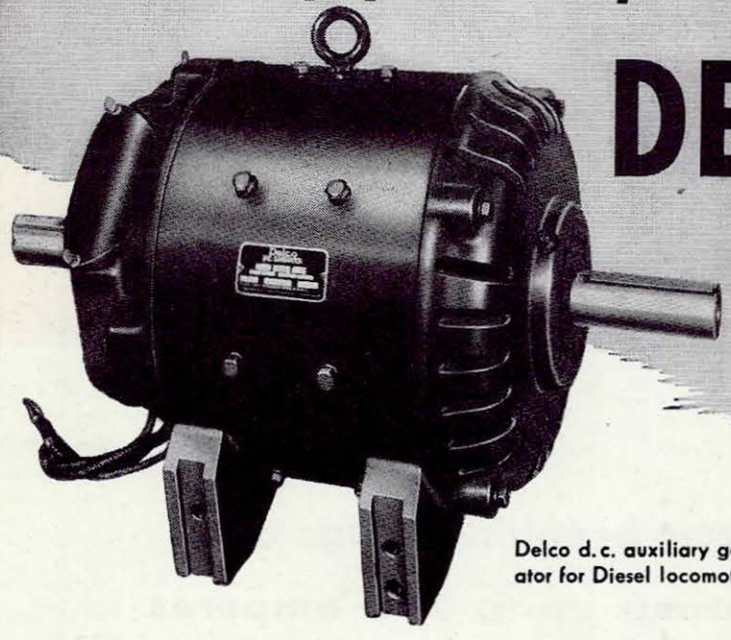
THE PYLE-NATIONAL COMPANY
1334-58 North Kostner Avenue • Chicago 51, Illinois
Offices: New York, Baltimore, Pittsburgh, St. Louis, St. Paul, San Francisco
Export Department: International Railway Supply Co., New York
Canadian Agents: The Holden Co., Ltd., Montreal

PYLE-NATIONAL
RAILWAY ELECTRICAL EQUIPMENT
• SINCE 1897 •

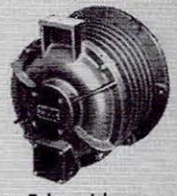
HEADLIGHTS • TURBO-GENERATORS • CONDUIT FITTINGS • FLOODLIGHTS • MULTI-VENT

Traction power by Diesel—

auxiliary power by DELCO

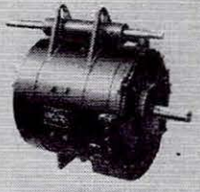


Delco d.c. auxiliary generator for Diesel locomotives.



Delco 5-h.p. blower motor for cooling traction motors

Delco 12-h.p. blower motor, vertical mounting, to cool grids in electric braking.



Delco compressor motor for car air-conditioning.

On Diesel-electric locomotives, this Delco auxiliary generator furnishes exciting current for the large d.c. generators which provide power for the traction motors. It also charges batteries and carries the lighting system.

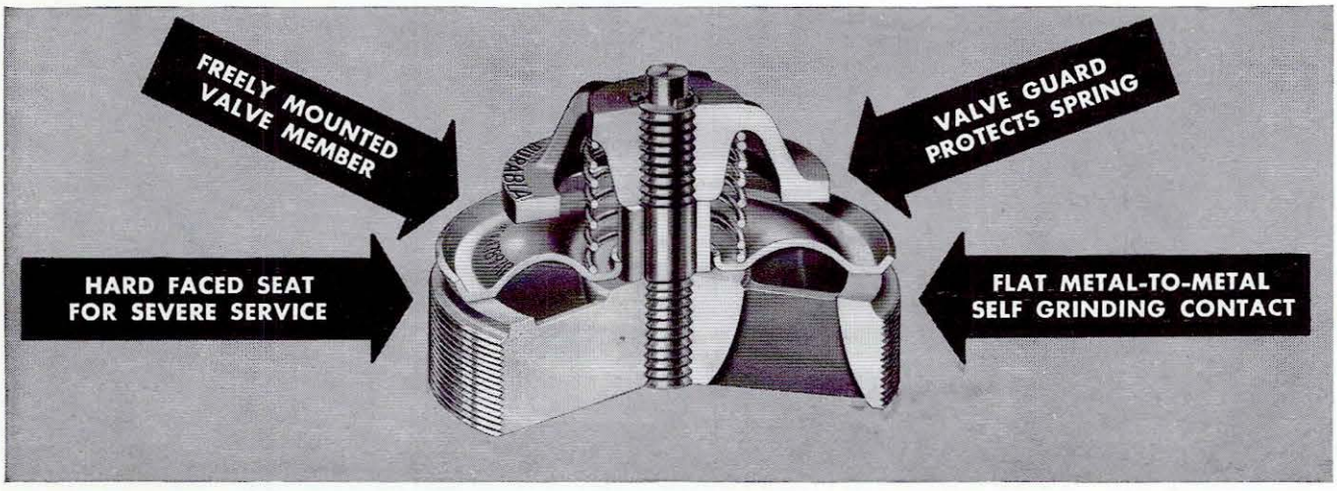
Like all Delco motors and generators for railroad use, this Delco generator is rugged and compact. Delco railroad equipment is designed for hard usage.

DELCO MOTORS

DIVISION OF GENERAL DELCO PRODUCTS DAYTON, OHIO MOTORS CORPORATION

DURABLA

METAL PUMP VALVE UNITS
KEEP YOUR PUMPS IN SERVICE


FREELY MOUNTED VALVE MEMBER
VALVE GUARD PROTECTS SPRING
HARD FACED SEAT FOR SEVERE SERVICE
FLAT METAL-TO-METAL SELF GRINDING CONTACT

1 **THEY ARE SELF-GRINDING:** Durabla Valve Units*, utilizing the freely mounted arched construction valve member exclusive to Durabla, are self-grinding, as the flat portion of the valve member is in direct contact with the flat valve seat and is free to move about its axis, thus producing a constant self-grinding action.

2 **VALVE SEATS ARE HARD FACED FOR SEVERE SERVICE:** Providing a seat surface hardness of Rockwell C-48-52 (approximately 500 Brinnel) or more in special valves, Durabla Valve Units have a long record of effective service with FLUIDS CARRYING SUSPENDED ABRASIVE SUBSTANCES. The metal valve member effectively prevents the pitting or "pick-up" of abrasive substances sometimes occurring with valves made of other materials.

3 **VALVE SPRINGS AND VALVE STEMS ARE PROTECTED:** The Valve Guard protects the Valve Spring from ever compressing more than 50% of its length. The Valve Stem is protected against breakage by the free mounting of the Valve Member.

Economy, efficiency and adaptability, based on long established service records and exclusive design make Durabla Valves your guarantee of reliable, uninterrupted pump operation.

You can specify Durabla Valves when you order a pump, (many manufacturers use them as standard equipment), or you can order Durabla Valves to fit any type of reciprocating pump, (they come with drive-fit seats or threaded seats with or without a shoulder to suit the job).

TO AVOID "PUMP TROUBLES" SPECIFY DURABLA VALVES

Address DURABLA Engineering Department for information and bulletin: Reference 6A7

*Patent Numbers 2090486, 2117504

DURABLA MANUFACTURING COMPANY
114 LIBERTY ST. NEW YORK
BRANCHES IN PRINCIPAL CITIES. FOR CANADA REFER: CANADIAN DURABLA LIMITED, TORONTO

SERVICE ALL THE WAY

OTIS MAINTENANCE FOR OTIS ELEVATORS

• Otis Maintenance extends all of the facilities and ability of the manufacturer directly to the buildings of Otis elevator owners.

To bring this service to your door, Maintenance operations are conducted by 245 local Otis offices, each adapted to the area it serves. These branch offices in turn have the benefit of progressive improvements in service developed by the facilities that produced more than half of the world's elevator equipment. Thus Otis Maintenance goes all the way to meet the convenience of the Otis elevator owner.

Few things you buy can so exactly fit your needs.

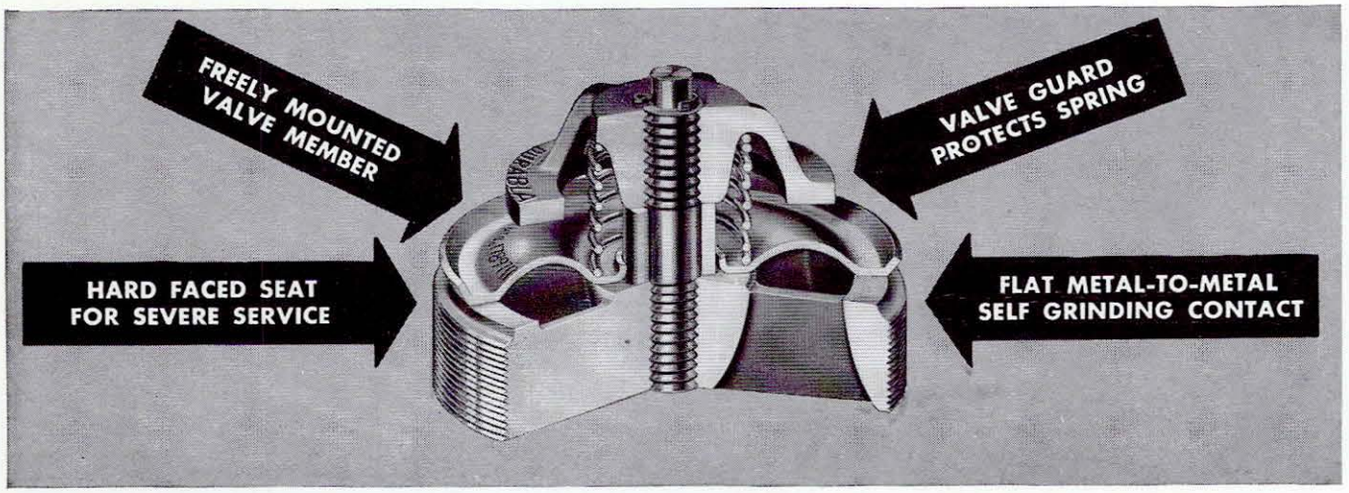
Maintenance by Otis, for Otis elevators, is available at a flat monthly rate through your local Otis Elevator Company office.

Otis **ELEVATOR COMPANY**

OFFICES IN ALL PRINCIPAL CITIES

DURABLA

METAL PUMP VALVE UNITS
KEEP YOUR PUMPS IN SERVICE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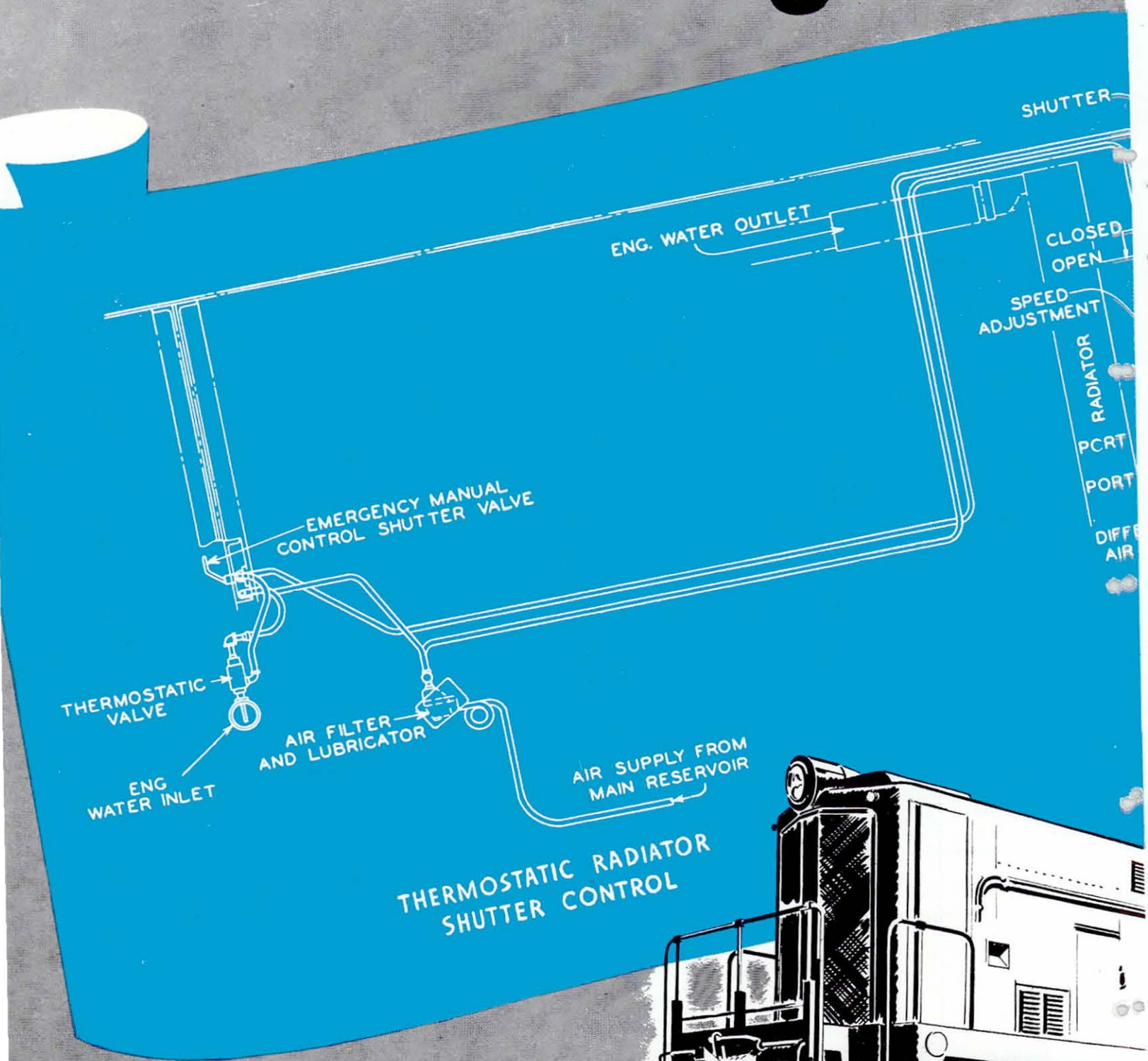
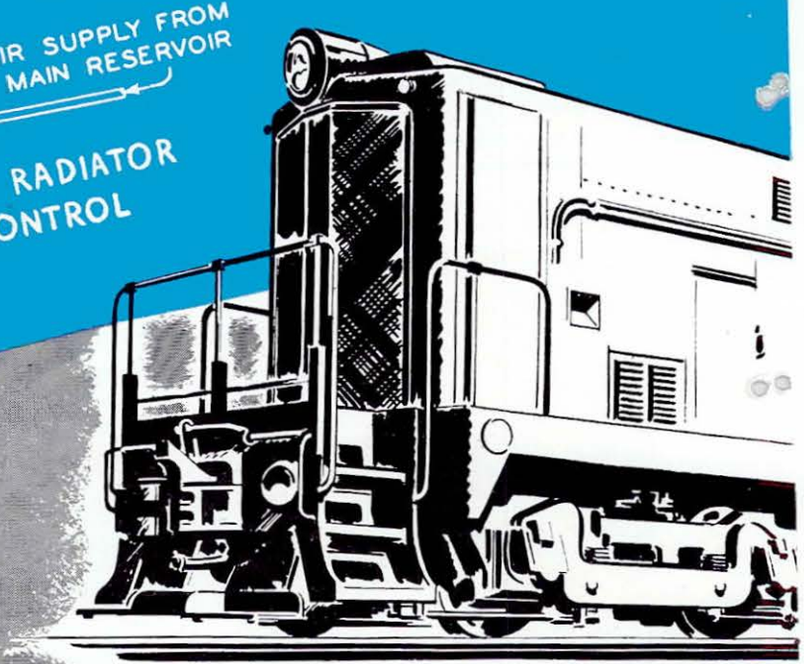
Engine

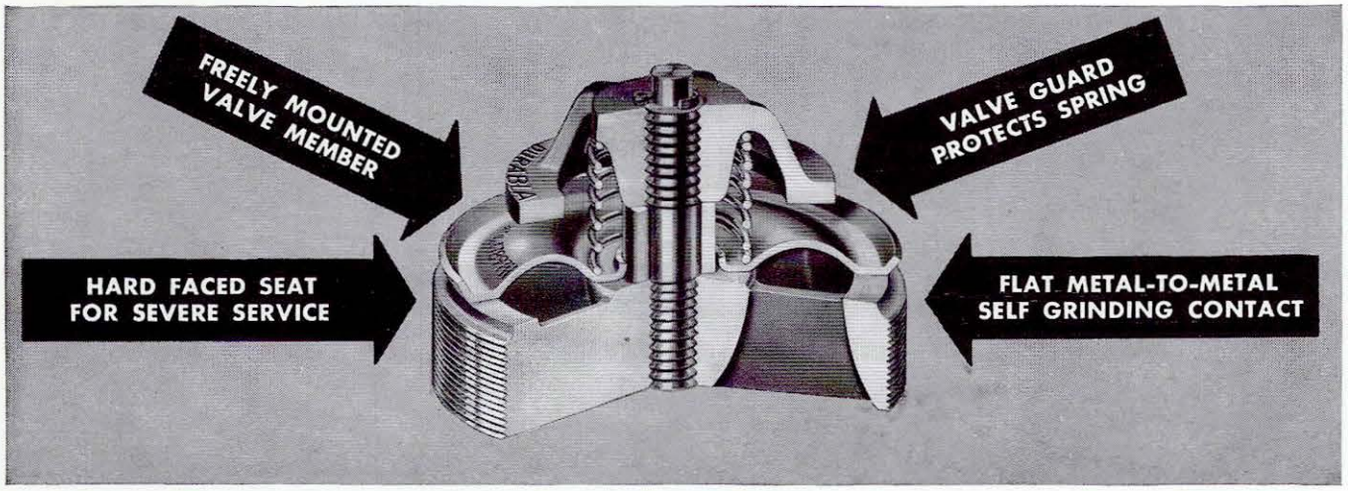


THERMOSTATIC RADIATOR SHUTTER CONTROL



DURABLA

METAL PUMP VALVE UNITS
KEEP YOUR PUMPS IN SERVICE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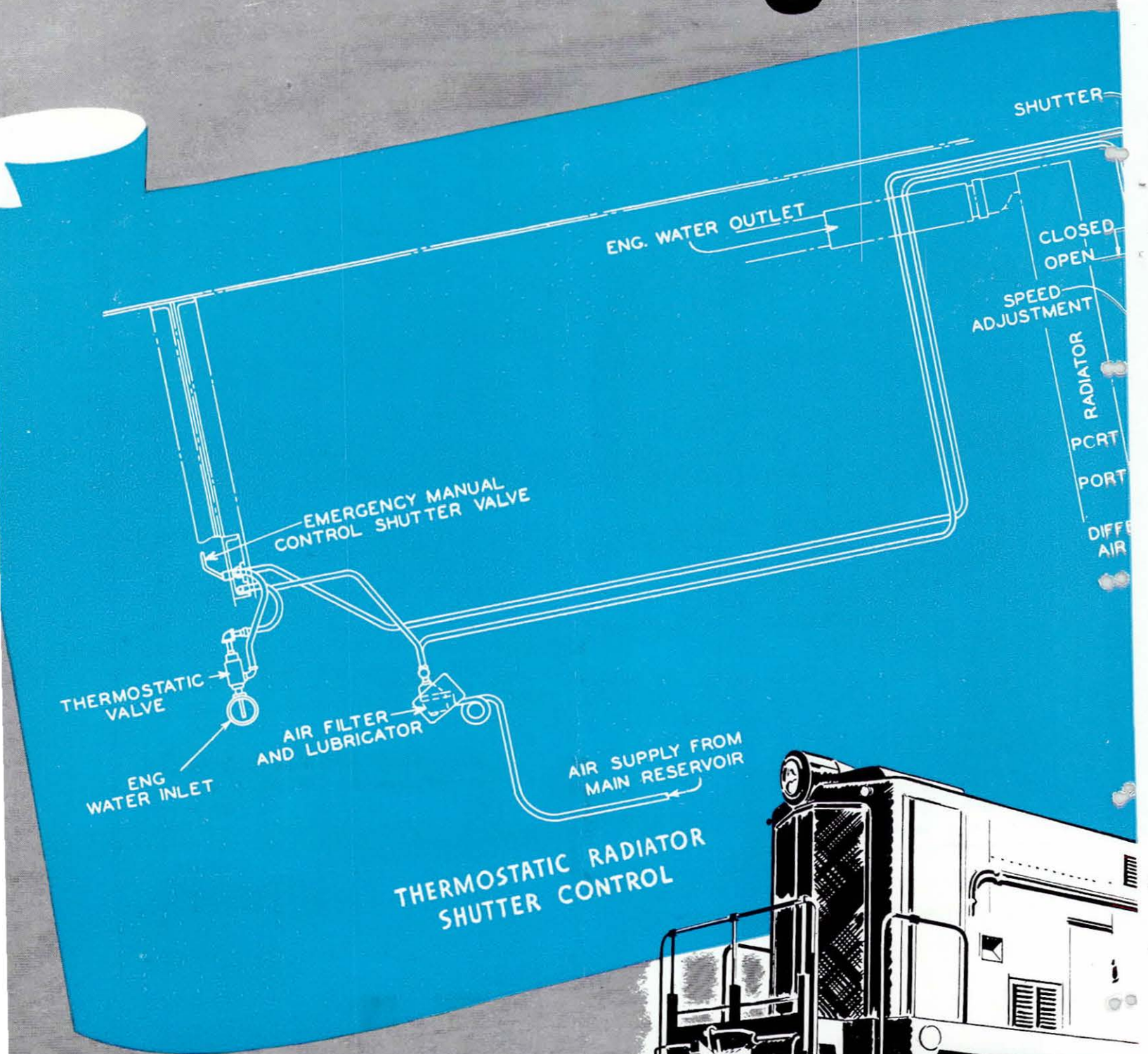
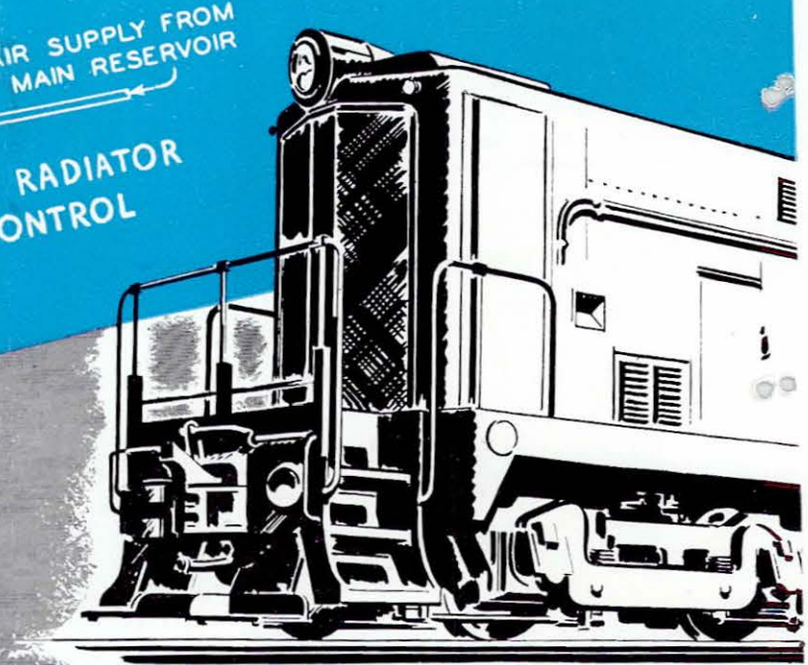
Engine

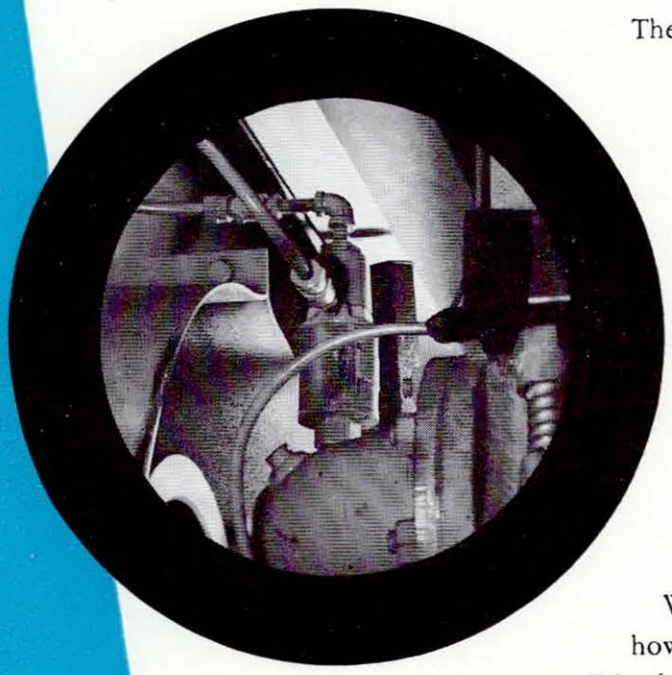


THERMOSTATIC RADIATOR SHUTTER CONTROL



Temperatures

ON BALDWIN-WESTINGHOUSE UNITS



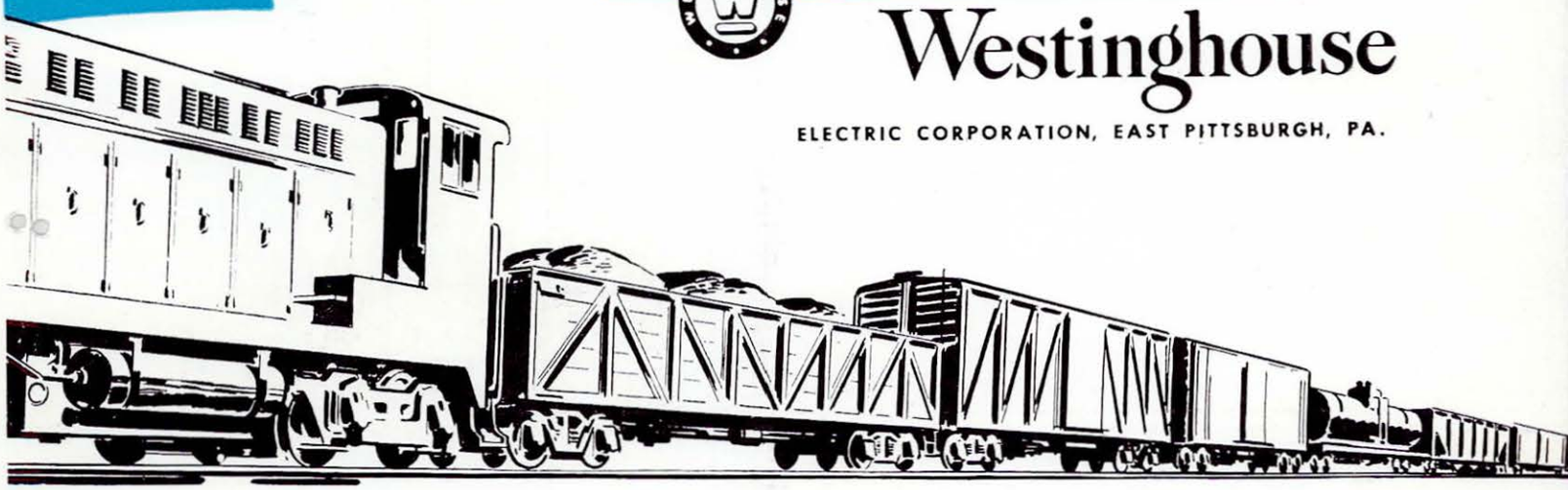
There's a "weather-man" on continuous duty in every Baldwin-Westinghouse Diesel-Electric Locomotive, that holds the engine operating temperature at the most efficient point.

When diesel engine temperatures run too low, there's a loss in fuel. When they run too high, there may be serious engine damage. Instead of making temperature checking and control another job for the busy engineman, Baldwin-Westinghouse Diesel-Electric Locomotives let a thermostatic shutter-control keep a weather-eye on conditions. In broiling summer heat or freezing winter weather, heavy hauls or light ones, high speeds or snails' pace, Baldwin-Westinghouse switchers work at the correct temperature. And that means *top output* and *minimum fuel*.

Would you like to have a survey and estimate made, showing how much your road could save by using Baldwin-Westinghouse Diesel-Electric Locomotives? One of our representatives will be pleased to make this study for you, at no cost or obligation to you.

THE **BALDWIN-**
LOCOMOTIVE WORKS, PHILADELPHIA

Westinghouse
ELECTRIC CORPORATION, EAST PITTSBURGH, PA.



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Otis ELEVATOR COMPANY

OFFICES IN ALL PRINCIPAL CITIES

It takes more than this *to solve*

Corrosion Problems

Photograph of locomotive under construction. There is available for locomotives a form of NO-OX-ID for every conceivable type of corrosion prevention. (*Photo: Courtesy Baldwin Locomotive Works.*)

NO-OX-ID GLOSS FILLER RED IS MADE TO ORDER FOR PROTECTION OF OUTSIDE OF BOILER SHELL UNDER LAGGING.

In locomotive shops you have two opportunities to stop corrosion of metal parts with applications of NO-OX-ID. The first and best paying opportunity is while the locomotives are being built. The second is when locomotives are shopped for classified repairs. Among the surfaces which can be protected against corrosion are the outside surface of boilers before lagging is put in place. For this purpose NO-OX-ID Gloss Filler Red is especially formulated. All finished parts such as side rods, piston rods, and inside of cylinders for protection of new locomotives and those going through the shop, also cylinder bushings after boring, need rustproofing. In fact, any exposed finished part which comes in contact with moisture and is therefore subject to corrosion, can be protected with NO-OX-ID.

There are many parts and places on tenders which can be NO-OX-ID protected. Write for complete information.

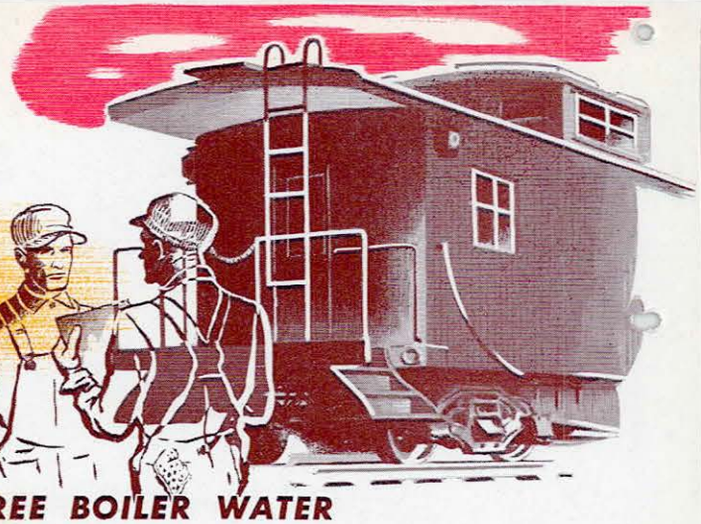
NO-OX-ID IRON + RUST

REG. TRADEMARK AUG. 27, 1918

The ORIGINAL RUST PREVENTIVE

Dearborn Chemical Company
310 S. Michigan Ave., Chicago 4 807-15 Mateo St., Los Angeles
205 E. 42nd St., New York 2454 Dundas St., West, Toronto

2 heads are better than 1



WHEN IT COMES TO PROVIDING TROUBLE-FREE BOILER WATER

1 DEARBORN ENGINEER SPOTS THE TROUBLE

2 DEARBORN LABORATORY COMES UP WITH THE ANSWER

Dearborn Anti-Foam

U. S. Patent No. 2,328,550

This new amine Anti-Foam is substantially nonsaponifiable and nonhydrolyzable in alkaline boiler waters. It does not form a residual soap to create a foaming boiler in sections where water does not require treatment. During layover periods at terminals or on schedules calling for locomotive operation over several divisions it is not necessary to change the water in the boiler or in the tender tank.

Dearborn Developed First Practical Anti-Foam Compound in 1904

The present amine-type Anti-Foam is a product of cooperative development between the scientists in the Dearborn laboratories and Dearborn Service Engineers ... again indicating that "two heads are better than one."

Dearborn amine Anti-Foam can be applied to water manually, but on railroads equipped with wayside treating plants it is added to the scale corrective treatment without additional equipment. Further details on request.

Photograph of Dearborn scientist and Dearborn Service Engineer observing Anti-Foam test in experimental boiler in the main Dearborn laboratory.

Dearborn
TRADE MARK REGISTERED

"THE **LEADER** FOR OVER HALF A CENTURY"

ENGINEERING SERVICE AND WATER TREATMENT

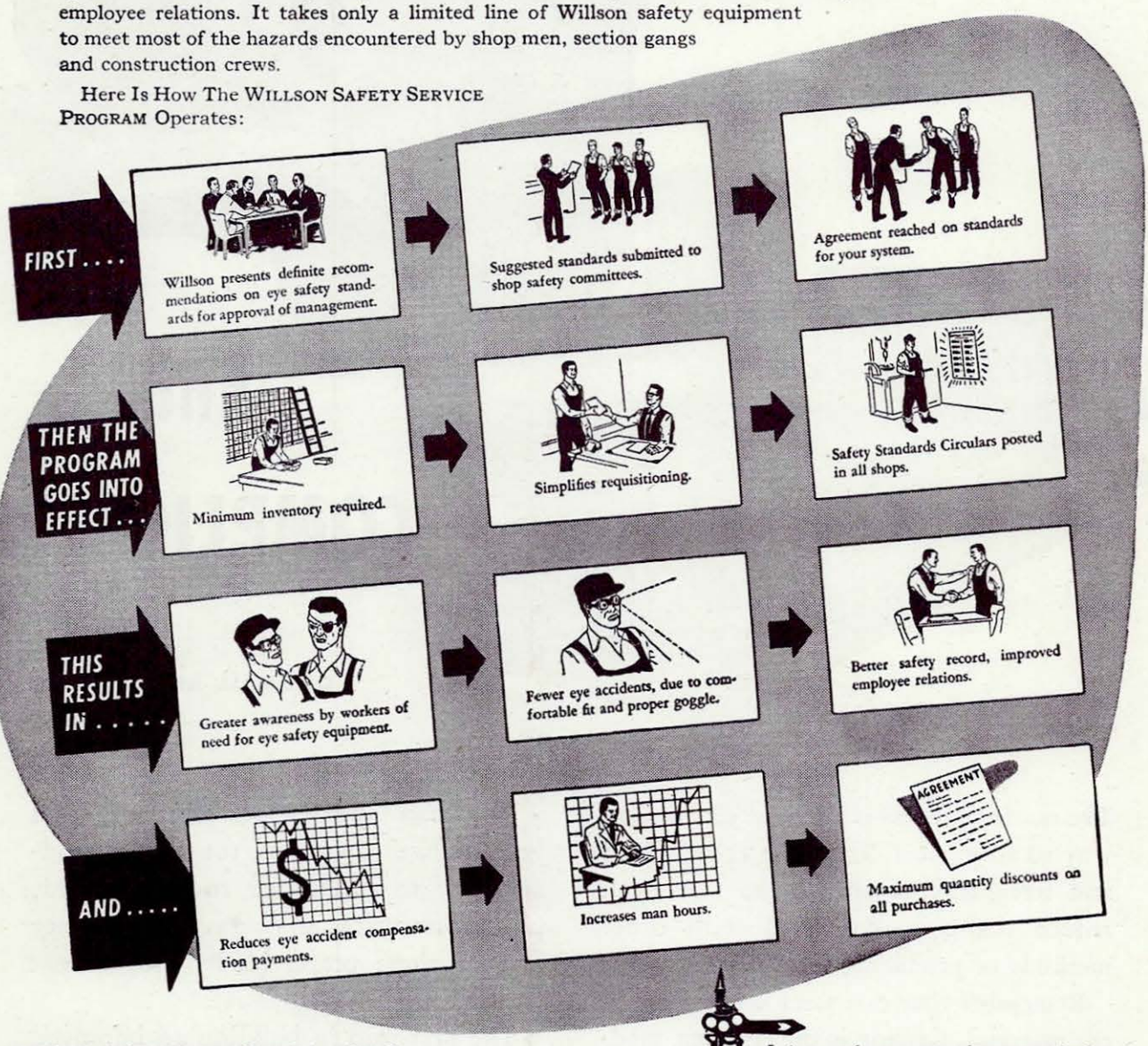
Dearborn Chemical Company
310 S. Michigan Ave., Chicago 4 — 807-15 Mateo St., Los Angeles
205 E. 42nd St., New York — 2454 Dundas St., West, Toronto

CUT EYE ACCIDENTS *by this Proved Method...*

the WILLSON RAILROAD SAFETY SERVICE PROGRAM

This plan helps you get advance employee acceptance which is the most important step in solving your problem of enforcing safety regulations. Roads now using this plan have reduced eye accidents and resulting compensation costs, increased productive time, and improved employee relations. It takes only a limited line of Willson safety equipment to meet most of the hazards encountered by shop men, section gangs and construction crews.

Here Is How The WILLSON SAFETY SERVICE PROGRAM Operates:

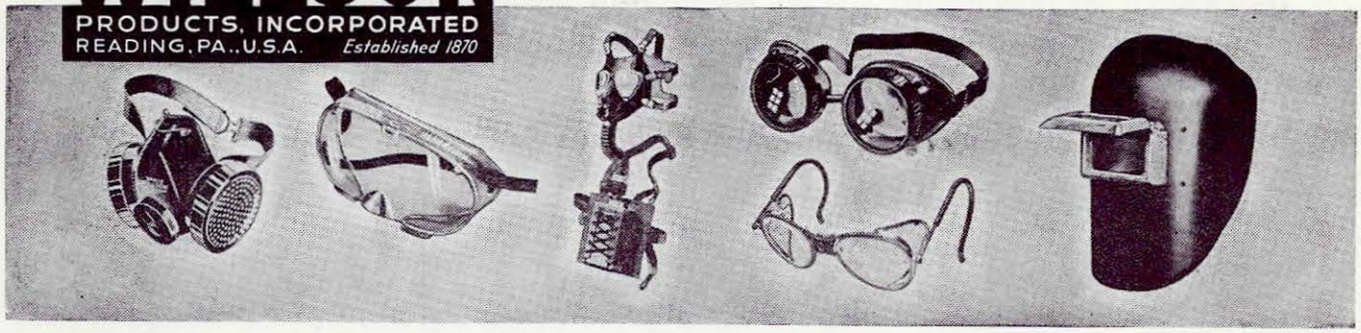

FIRST....
Willson presents definite recommendations on eye safety standards for approval of management.
Suggested standards submitted to shop safety committees.
Agreement reached on standards for your system.
THEN THE PROGRAM GOES INTO EFFECT...
Minimum inventory required.
Simplifies requisitioning.
Safety Standards Circulars posted in all shops.
THIS RESULTS IN.....
Greater awareness by workers of need for eye safety equipment.
Fewer eye accidents, due to comfortable fit and proper goggle.
Better safety record, improved employee relations.
AND.....
Reduces eye accident compensation payments.
Increases man hours.
AGREEMENT
Maximum quantity discounts on all purchases.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

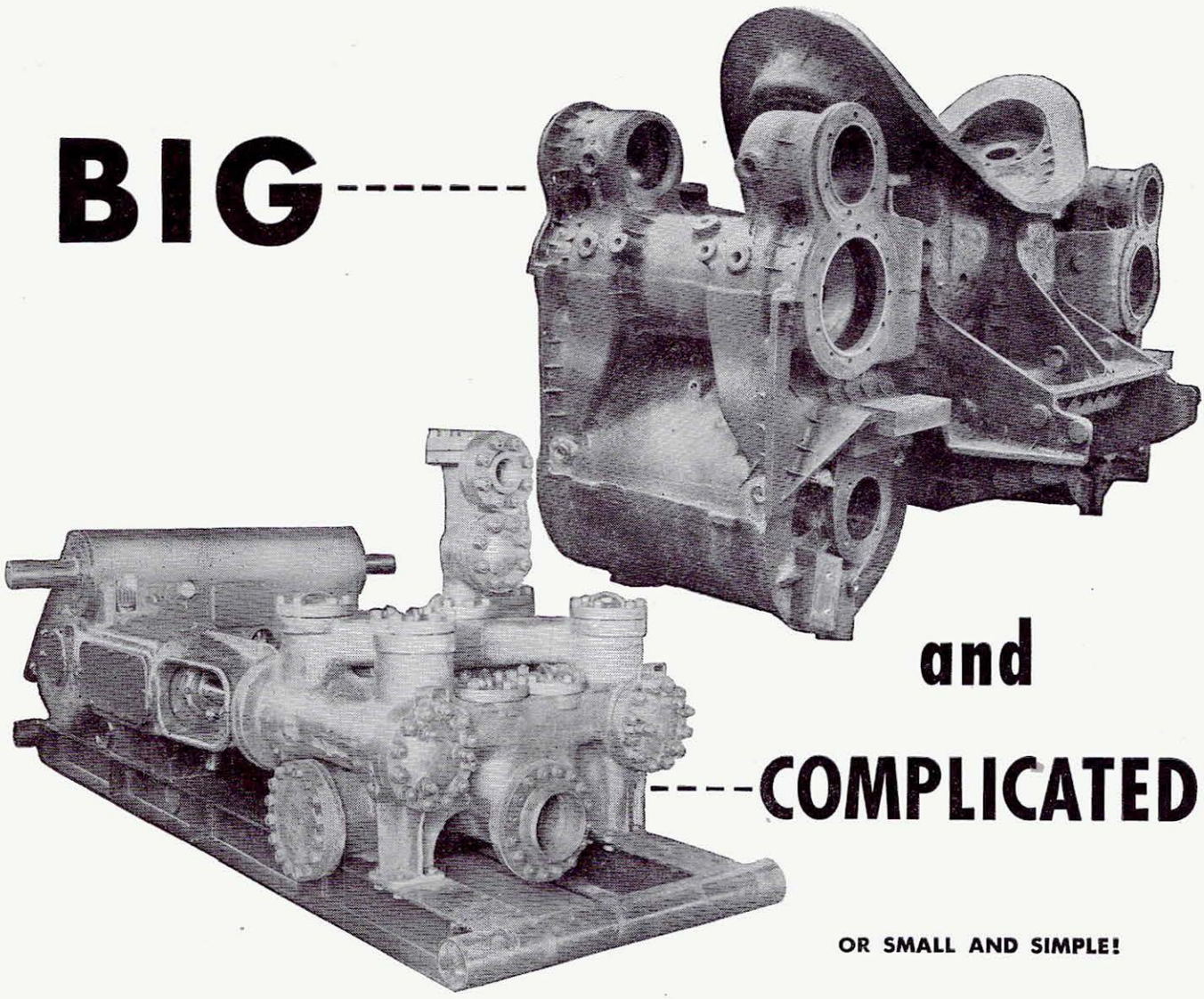
DOUBLE WILLSON

PRODUCTS, INCORPORATED
READING, PA., U.S.A. *Established 1870*

Let us make a survey of your particular safety needs—at no obligation on your part. For detailed information on the Willson Safety Service Program write to the Railroad Sales Dept., Willson Products, Inc., 240 Washington St., Reading, Pa.



BIG------



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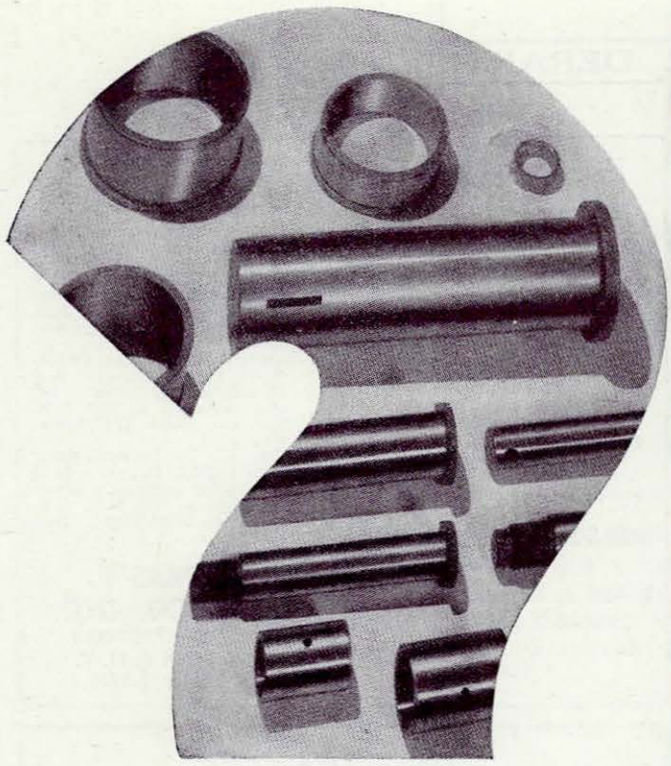

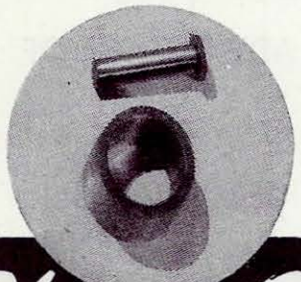

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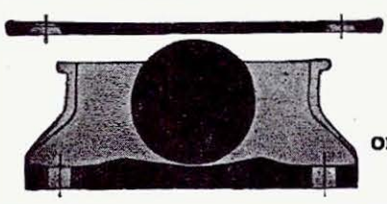

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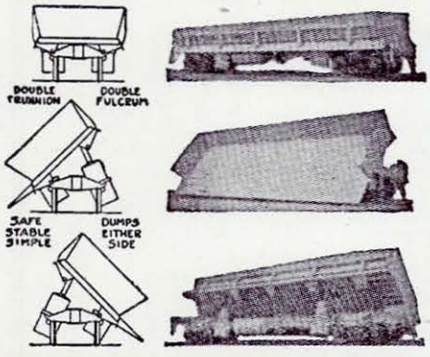

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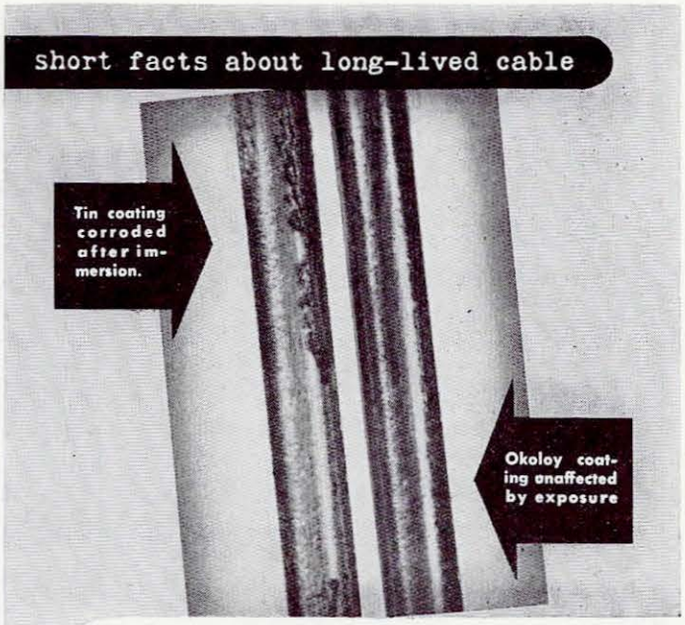

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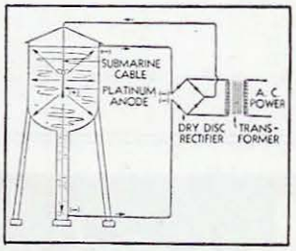

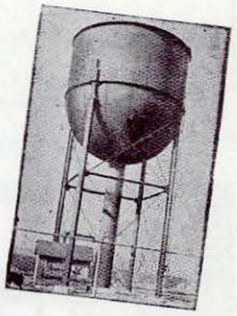

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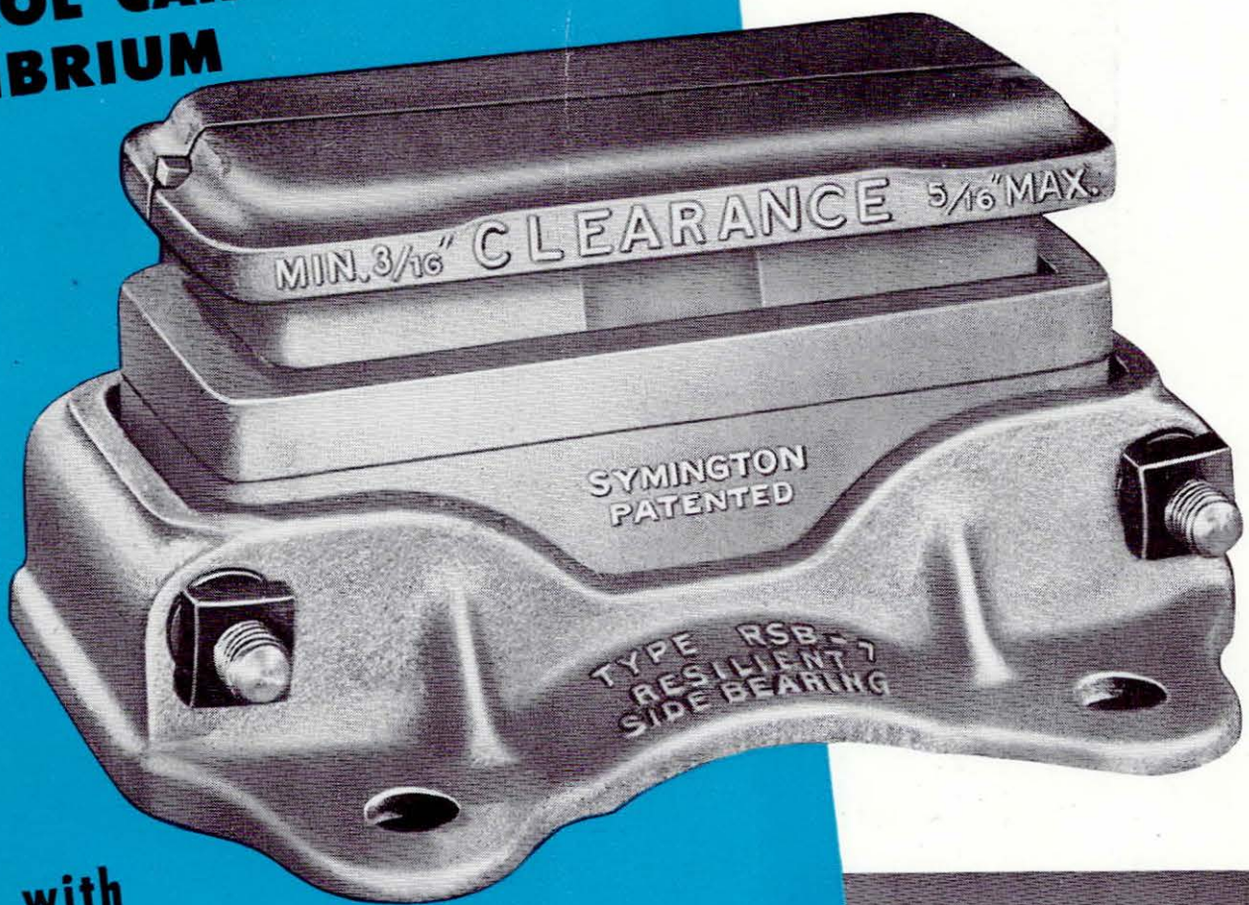

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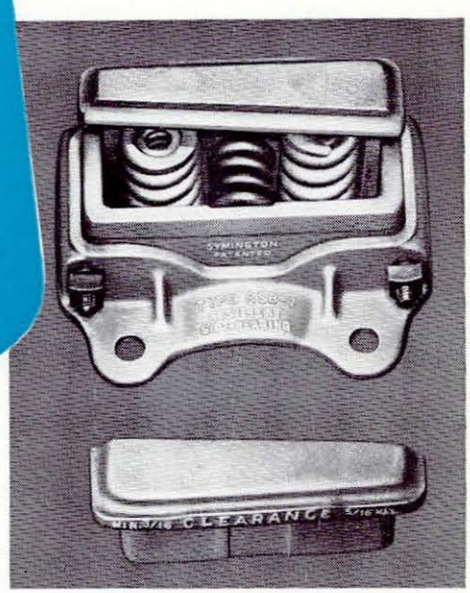

Partially assembled view of the Symington Resilient Side Bearing showing construction.

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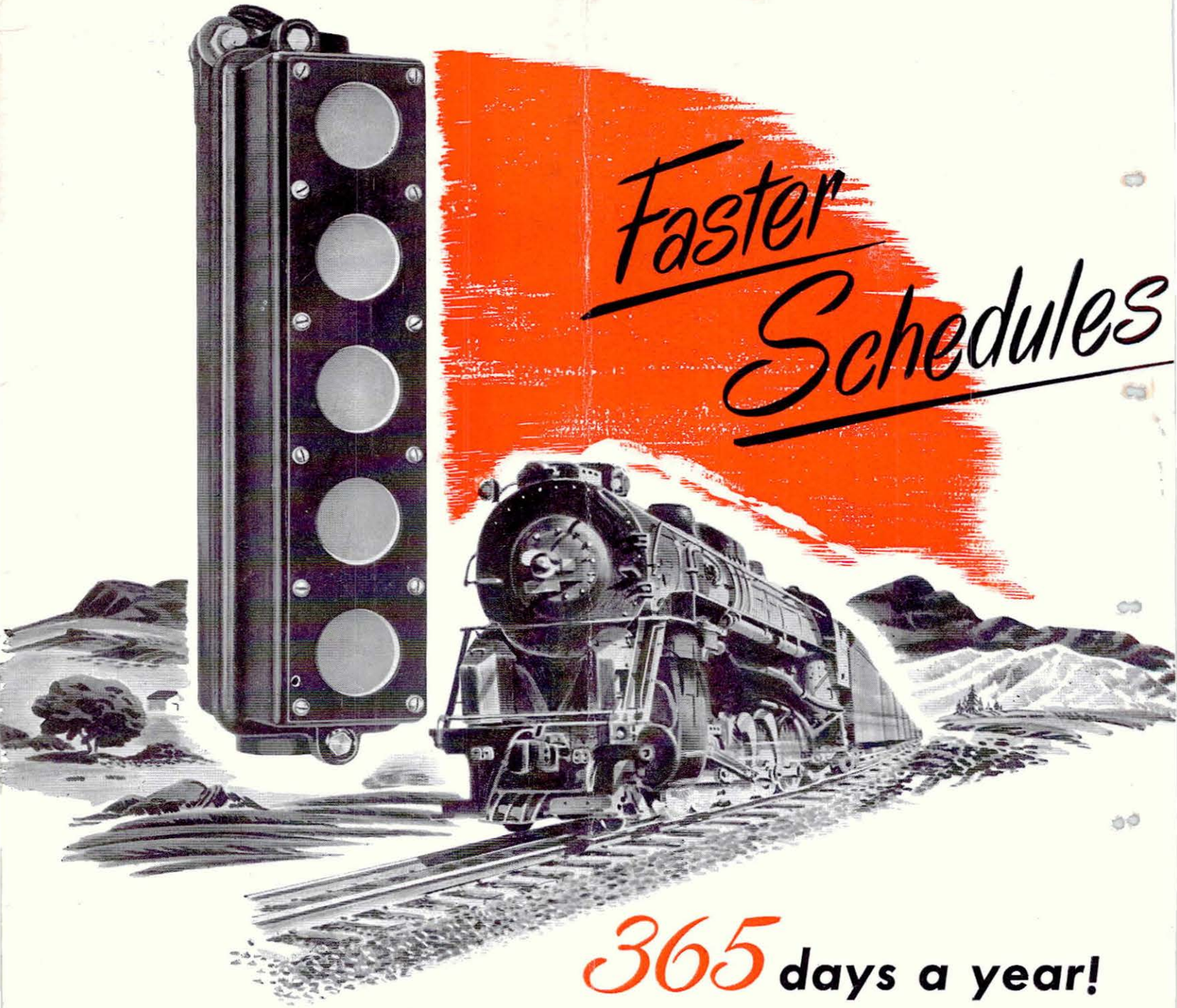

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